# CCD-TR21/TR212/TR212PK
## RMT-704

# SERVICE MANUAL

US Model
Canadian Model
CCD-TR21
E Model
CCD-TR212/TR212PK

**Video8**
**Handycam**

A MECHANISM

**For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ" (9-973-199-11).**

- CCD-TR21/TR212/TR212PK are based on model CCD-TR31/TR303/TR303PK.
  〔Main differences〕
  1. Beep switch and fader button are deleted.
  2. The program AE dial position is reduced from 5 to 4 in number.
  3. Boards are changed.

| CCD-TR31/TR303/TR303PK | CCD-TR21/TR212/TR212PK |
|---|---|
| CF-32 | CF-35 (1-648-683-11) |
| ED-35 | ED-39 (1-648-681-11) |
| JK-91 | JK-107 (1-648-679-11) |
| LI-44 | LI-47 (1-648-684-11) |
| MF-191 | MF-237 (1-648-682-11) |
| SW-205 | SW-229 (1-648-678-11) |
| VK-27 | VK-33 (1-648-680-11) |

- In this service manual, only the differences from CCD-TR31/TR303/TR303PK are mentioned.
  When servicing, see the CCD-TR31/TR303/TR303PK service manual (9-973-267-11) with this.

- Although the following boards are the same name, the part Numbers of mounted boards supplied are different.
  However, board-mounted parts are the same as CCD-TR31/TR303/TR303PK (SUPPLEMENT-2) unless otherwise specified.

| BOARD | Part number of mounted board | |
|---|---|---|
| | CCD-TR31/TR303/TR303PK | CCD-TR21/TR212/TR212PK |
| DD-48 | A-7063-264-A | A-7063-743-A |
| VS-95 * | A-7063-260-A | A-7063-717-A |
| VC-122 | A-7063-261-A | A-7063-740-A |
| CD-92 | A-7063-262-A | A-7063-739-A |
| AU-138 | A-7063-265-A | A-7063-817-A |
| MA-149 | A-7063-267-A | A-7063-745-A |
| SL-27 | A-7063-263-A | A-7063-742-A |
| CN-65 | A-7071-657-A | A-7071-906-A |

— Continued on next page —

## 8 VIDEO CAMERA RECORDER

**SONY®**

MICROFILM

**Note:**

- Only the following parts are different for the VS-95 board.

| Ref. No. | Part No. | Description | | | | Location (CCD-TR31/TR303/TR303PK Supp-2) | | (CCD-TR31/ TR303/ TR303PK Supp-2) | CCD-TR21/ TR212/ TR212PK |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PRINTED | SCHEMATIC | | |
| R492 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | H-8 | H-7 | MOUNT | NO MOUNT |

(SERVO/ SYSCON BLOCK)

- CCD-TR212PK is a model that soft carrying case is added in CCD-TR212.
  CCD-TR212PK is different from CCD-TR212 only in accessory and packing materials.

## SPECIFICATIONS

### Video Camera Recorder

**System**

| | |
|---|---|
| Video recording system | Two rotary heads, Helical scanning FM system |
| Audio recording system | Two rotary heads, FM system |
| Video signal | NTSC color, EIA standards |
| Usable cassette | 8 mm video format cassette (standard 8 mm) |
| Tape speed | SP mode: Approx. 1.43 cm (19/32 inches)/s<br>LP mode: Approx. 0.72 cm (5/16 inches)/s (playback only) |
| Recording time | SP mode: 2 h (P6-120) |
| Playback time | SP mode: 2 h (P6-120)<br>LP mode: 4 h (P6-120) |
| Fastforward/rewind time | Approx. 6 min 30 s (P6-120) |
| Image device | CCD (Charge Coupled Device) |
| Viewfinder | Electronic viewfinder (monochrome) |
| Lens | Combined 10 x Power zoom lens<br>f = 6.2 to 62 mm<br>(1/4 to 2 7/16 inches)<br>F 1.6 to 2.9 (45 to 450 mm when converted to a 35 mm still camera)<br>Filter diameter 37 mm (1 1/2 inches)<br>TTL autofocus system inner focus wide macro system |
| Color temperature | Auto |
| Minimum illumination | 2 lx (F 1.6) |
| Illumination range | 2 lx to 100,000 lx |
| Recommended illumination | More than 100 lx |

**Input and output connectors**

| | |
|---|---|
| Video output | Phono jack, 1 Vp-p, 75 Ω, unbalanced, sync negative |
| Audio output | Phono jacks –7.5 dBs, (at load impedance 47 kΩ) impedance less than 2.2 kΩ |
| RFU DC OUT | Special minijack, DC 5 V |
| Remote jack | Stereo mini-minijack (ø 2.5 mm) |
| MIC jack | minijack, – 66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kΩ (ø 3.5 mm) |

**General**

| | |
|---|---|
| Power requirements | On battery mounting surface<br>6.0 V (battery pack)<br>7.5 V (AC power adaptor) |
| Average power consumption | 5.3 W (camera recording) including the viewfinder |
| Installation | Vertically, Horizontally |
| Operating temperature | 0°C to 40°C (32°F to 104°F) |
| Storage temperature | –20°C to +60°C (–4°F to +140°F) |
| Dimensions | Approx. 109 x 109 x 178 mm (w/h/d)<br>(4 3/8 x 4 3/8 x 7 1/8 inches) |
| Mass | About 770 g (1 lb 11 oz) excluding the battery pack, lithium battery, cassette, and shoulder strap<br>About 1,000 g (2 lb 3 oz) including the battery pack NP-55, lithium battery CR2025, cassette P6-120, and shoulder strap |
| Microphone | Electric condenser microphone, monaural type |

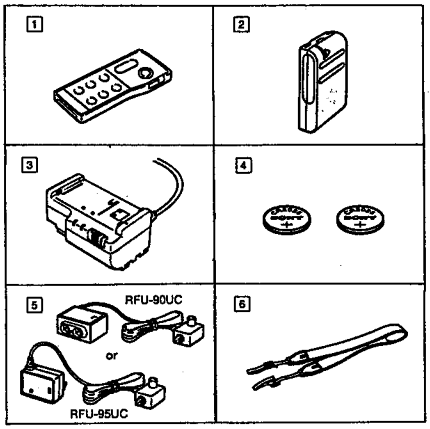
### AC power adaptor

| | |
|---|---|
| Power requirements | 110-240 V AC*, 50/60 Hz |
| Power consumption | 15 W (AC-V25)<br>17 W (AC-V25A) |
| Output voltage | DC OUT: 7.5 V, 1.2 A (AC-V25)<br>7.5 V, 1.5 A (AC-V25A)<br>in operating mode<br>Battery charge terminal: 10 V, 1.1 A in charge mode |
| Application | Sony battery packs NP-55/55H, NP-60D, NP-66/66H, NP-77H/77HD, NP-80/80D |
| Operating temperature | 0°C to 40°C (32°F to 104°F) |
| Storage temperature | –20°C to +60°C (–4°F to 140°F) |
| Dimensions | Approx. 103 x 49 x 63 mm (w/h/d)<br>(4 1/8 x 1 15/16 x 2 1/2 inches)<br>including projecting parts and controls |
| Weight | Approx. 290 g (10 oz) (AC-V25)<br>Approx. 320 g (11 oz) (AC-V25A) |

* Canadian Standard Association (CSA) certifies 120 V AC only.

Design and specifications are subject to change without notice.

Supplied accessories



- 1 **Wireless Remote Commander** (1)
- 2 **Battery pack NP-55** (1) **(TR21/TR212)**
  **Battery pack NP-66H (TR212PK)**
- 3 **AC power adaptor AC-V25/V25A** (1)
- 4 **Lithium Battery CR2025** (2)
  (One is for the camcorder and the other is for the Remote Commander)
- 5 **RFU adaptor RFU-90UC or RFU-95UC** (1)
  (The RFU-90UC is used in the connection diagram in this manual.)
- 6 **Shoulder strap** (1) (TR21)

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## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

**ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!**

**LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.**

# Charging and Installing the Battery Pack

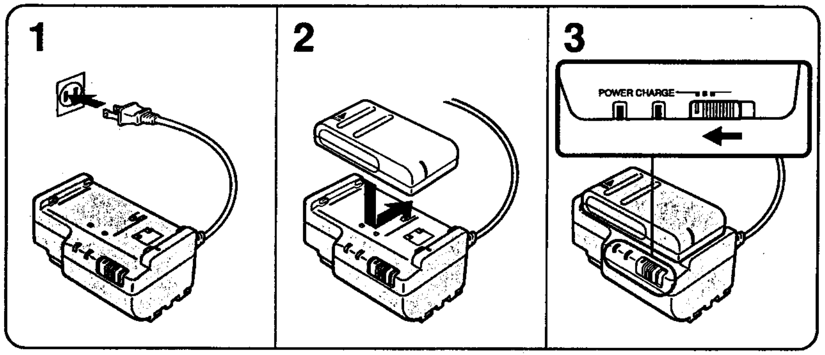
Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC-V25/V25A AC power adaptor.

## Charging the Battery Pack

Charge the battery pack on a flat place without vibration.

(1) Connect the power cord to a wall outlet. (2) Align the right side of the battery pack with the white line on the AC power adaptor, then slide the battery pack in the direction of the arrow. (3) Set the selector to CHARGE. Charging begins.

When charging is completed, the CHARGE lamp goes out. Set the selector to the center position and unplug the unit from the wall outlet. Then remove the battery pack and install it on the camcorder. To stop charging, set the selector to the center position.



### Charging Time and Battery Life

| Battery pack | NP-55 (supplied) | NP-80<br>NP-80D | NP-77H<br>NP-77HD | NP-66H | NP-60D | NP-55H |
|---|---|---|---|---|---|---|
| Charging time* | 70 | 180 | 160 | 120 | 90 | 80 |
| Battery life** | 60 | 160 | 150 | 110 | 80 | 70 |

* Approximate charging time to charge an empty battery pack using the AC-V25/V25A (Lower temperatures require a longer charging time.)

** Approximate continuous recording time indoors

**Important!**

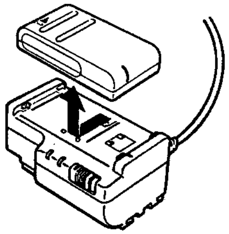
**Use the battery completely before re-charging!**

Before you recharge the battery, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery attached, and leave the camcorder until the ▭ indicator and the red lamp flash in the viewfinder.

### Removing the Battery Pack

Slide the battery pack in the direction of the arrow (see drawing).

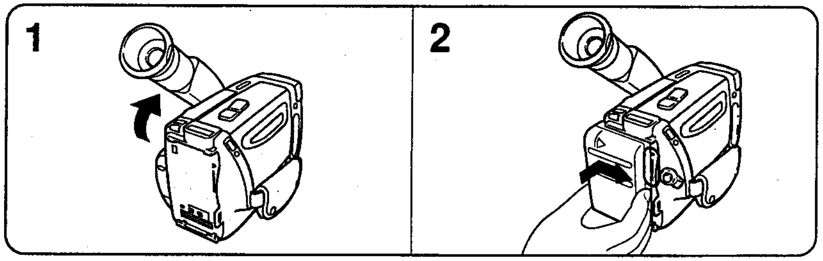


**Note on charging the battery pack**

- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

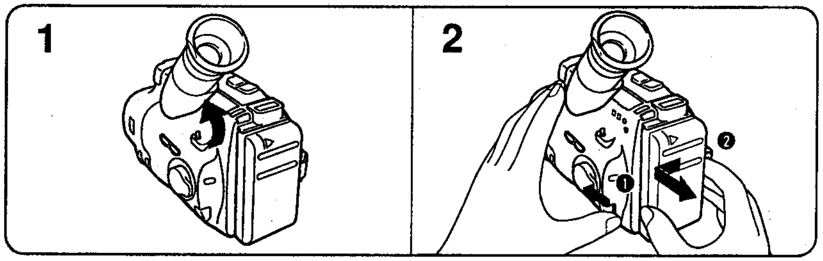
## Installing the Battery Pack

(1) Lift up the viewfinder. (2) Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack to the right.



### Removing the Battery Pack

(1) Lift up the viewfinder. (2) While pressing BATT, slide the battery pack to the left.

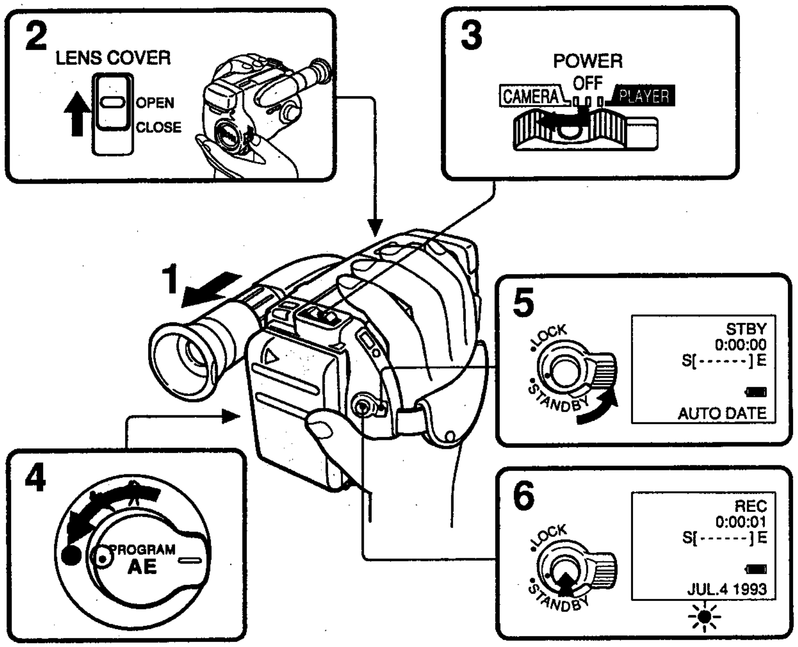


This section is extracted from CCD-TR21 instruction manual.

**Basic Operations**

# Camera Recording

Make sure that the power source is installed and a cassette is inserted. If you set the date (p. 12), the date is automatically recorded for 10 seconds after you start recording (AUTO DATE feature). This feature works only once a day. You can use the Remote Commander to record yourself with your friends or family. When you use the Remote Commander, make sure that the REMOTE COMMANDER switch on the camcorder is set to ON (p. 41).
Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working perfectly.
(1) Pull out the viewfinder until it clicks. (2) Slide the LENS COVER switch to OPEN. (3) While pressing the small green button on the POWER switch, slide it to CAMERA. (4) Set the white mark of the PROGRAM AE dial to the green position. (5) Turn STANDBY up. Adjust the viewfinder lens so that the indicators in the viewfinder come into sharp focus (p. 14). (6) Press START/STOP. The camcorder starts recording and the red lamp lights up in the viewfinder.



### To Stop Recording Momentarily

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

### To Finish Recording

Turn STANDBY down and slide the POWER switch to OFF. Slide the LENS COVER switch to CLOSE and eject the tape (p. 13).

**Notes on Standby mode**
If you leave the camcorder in Standby mode for 5 minutes, the camcorder goes off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

**Note on the tape counter**
The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.

**Note on the AUTO DATE feature**
- The AUTO DATE feature works once a day. However, the date may automatically appear more than once a day when:
  - you reset the date and time.
  - you eject and insert the tape again.
  - you stop recording within 10 seconds.
  - you press AREA and the date changes.
- Once the AUTO DATE feature turns off the date display 10 seconds after the start of recording, the date and time are displayed as follows:
  - If the date display setting has been made, the date is displayed.
  - If the time display setting has been made, the time is displayed.
  - If neither display setting has been made, nothing is displayed.

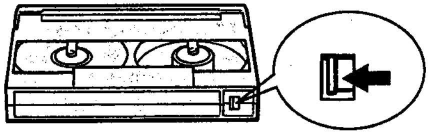
**If you wear glasses**
You can bend back the eyecup to get a better view of the viewfinder.

**When moving from indoors to outdoors (or vice versa)**
Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

**Note on recording**
When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you playback the tape.
You can record tapes in SP (standard play) mode only.

## Preventing Accidental Erasure

To prevent accidental erasure, slide the tab on the cassette to expose the red mark. If you try to record with the red mark exposed, the ▣ and ▲ indicators flash in the viewfinder, and you cannot record. To re-record on this tape, slide the tab back out covering the red mark.



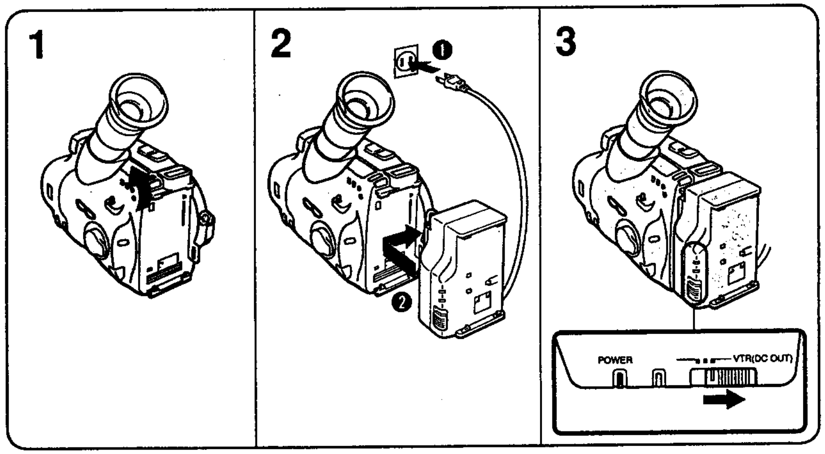
# Using Alternate Power Sources

You can choose any of the following power sources for your camcorder: battery pack (p. 7), house current, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

| Place | Power source | Accessory to be used |
|---|---|---|
| Indoors | House current | AC power adaptor AC-V25/V25A (supplied), AC-S10, AC-V55 |
| Outdoors | Battery pack | Battery pack NP-55 (supplied), NP-80D, NP-80, NP-77HD, NP-77H, NP-66H, NP-60D, NP-55H |
| In the car | 12 V or 24 V car battery | DC pack DCP-77 |

## Using House Current

To use the supplied AC-V25/V25A AC power adaptor:
(1) Lift up the viewfinder. (2) Connect the AC power cord to a wall outlet. Connect the bottom of the AC power adaptor to the battery mounting surface of the camcorder. (3) Set the selector to VTR (DC OUT).



**Note on the POWER lamp**
- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to VTR (DC OUT) again.

**To remove the adaptor**
The adaptor is removed in the same way as the battery pack. (p. 7)

## Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

**To remove the DC pack**
The DC pack is removed in the same way as the battery pack. (p. 7)

## Options for Charging the Battery Pack

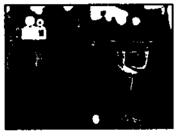
- AC-S10 AC power adaptor:
  You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.
- BC-S10 portable battery charger (ideal for travel):
  You can charge a battery pack on 100-240 V AC current.

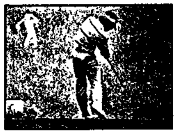
# Using the PROGRAM AE Function

You can select from three PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a Portrait effect (the subject is in focus and the background is out of focus) or capture high-speed action.

## Selecting the Best Mode

Select one of three modes, referring to the following.





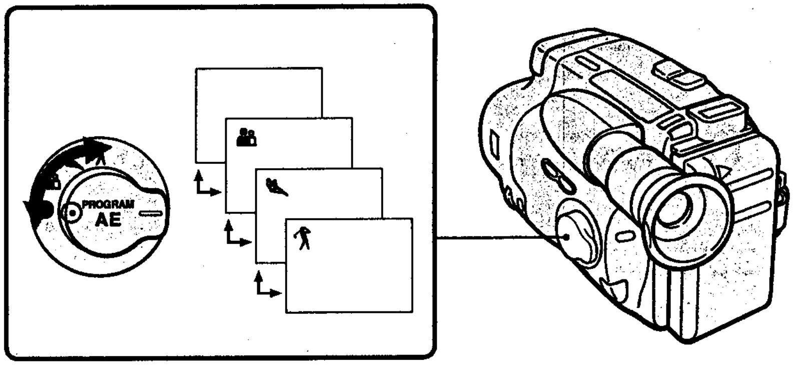
Portrait mode
- A still subject such as a person or a flower
- Zooming in on a subject in the telephoto mode
- A subject behind an obstacle such as a net

Sports mode
- Outdoor sports scene such as football, tennis, golf or skiing
- A landscape in a moving car

High speed shutter mode
- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in a clear, sharp picture

## Using the PROGRAM AE Function

Set the white mark of the PROGRAM AE dial to the desired PROGRAM AE mode. The indicator of the selected PROGRAM AE mode appears in the viewfinder.



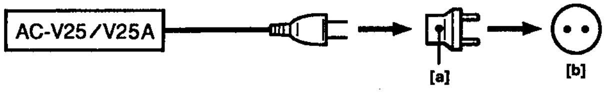
**Note on shutter speed**
The shutter speed in each PROGRAM AE mode is as follows:
Portrait mode — between 1/60 to 1/2000
Sports mode — between 1/60 to 1/500
High-speed shutter mode — 1/4000

## Using Your Camcorder Abroad

Each country has its own electricity and TV color system. Before using your camcorder abroad, check the following points.

### Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.
Use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



### To View the Playback Picture

This camcorder is an NTSC system based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV or a PAL-M system based TV with an NTSC/PAL-M transcoder. Check the following list.

**NTSC system countries**
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

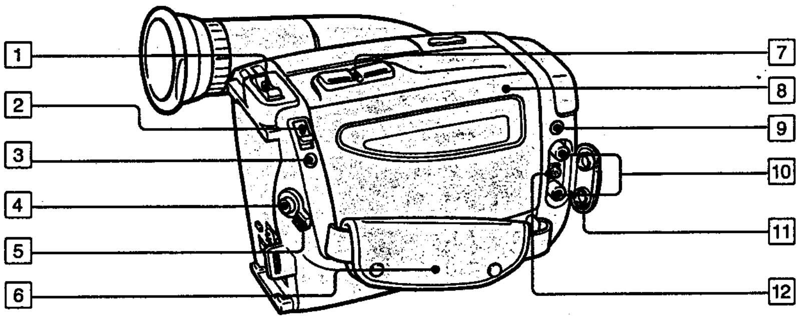
**PAL system countries**
Australia, Austria, Belgium, China, Denmark, Finland, former West Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

**PAL-M system country**
Brazil

**PAL-N system countries**
Argentina, Paraguay, Uruguay

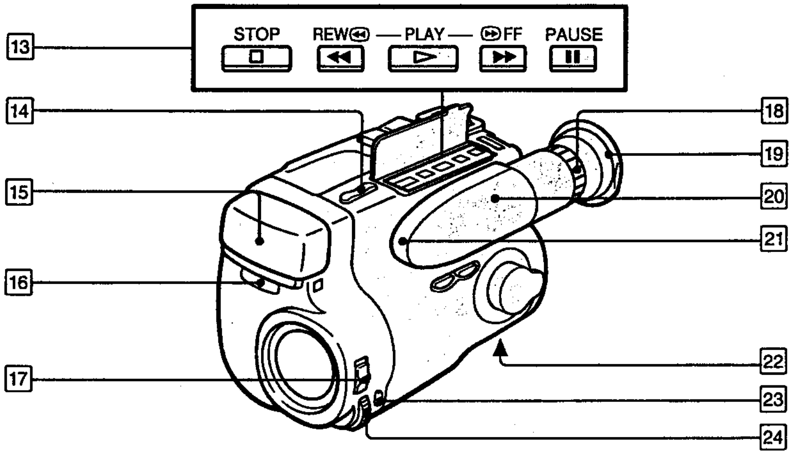
**SECAM system countries**
Bulgaria, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, former Soviet Union, etc.

## Identifying the Parts



1. **POWER switch** (p. 15, 21)
2. **EJECT knob** (p. 13)
3. **REMOTE Ⓛ (LANC) control jack**
   Ⓛ stands for Local Application Control Bus System.
   The Ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.
4. **START/STOP button** (p. 15)
5. **STANDBY switch** (p. 15)
6. **Grip strap** (p. 14)
7. **Power zoom button** (p. 17)
8. **Cassette holder** (p. 13)
9. **MIC jack (PLUG IN POWER)**
   Connect an optional external microphone (stereo or monaural).
   This jack also accepts a "plug-in-power." microphone.
10. **Audio/Video output jacks** (p. 20)
11. **Jack cover**
12. **RFU DC OUT (RFU adaptor DC output) jack** (p. 20)

## Identifying the Parts



13 **Tape transport buttons** (p. 21)
- □ STOP
- ◀◀ REW (rewind)
- ▷ PLAY (playback)
- ▶▶ FF (advancing the tape)
- ❚❚ PAUSE

14 **EDITSEARCH button** (p. 19)

15 **Built-in microphone**

16 **Remote sensor** (p. 42)
Aim the Remote Commander here for remote control.

17 **LENS COVER switch**

18 **Viewfinder lens adjustment ring** (p. 14)

19 **Eyecup**

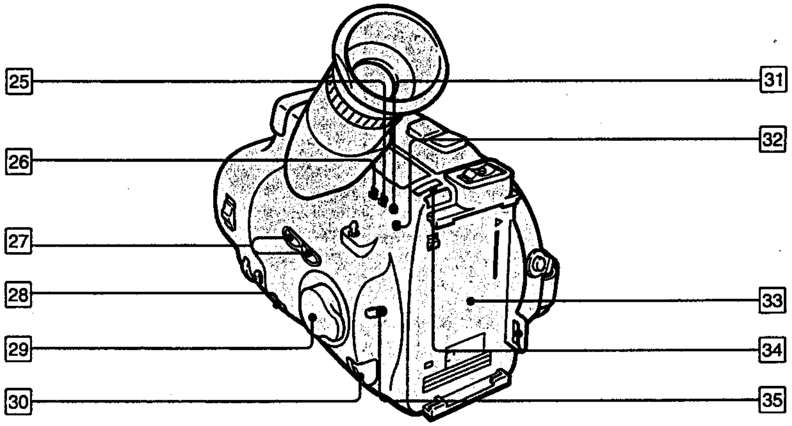
20 **Viewfinder** (p. 14, 19)

21 **Camera recording/battery lamp**

22 **Tripod receptacle** (p. 14)

23 **FOCUS button** (p. 25)

24 **Focus dial** (p. 25)



25 **EDIT switch** (p. 30)

26 **REMOTE COMMANDER switch** (p. 41)

27 **DATE (+) and TIME (NEXT) buttons** (p. 12)

28 **Lithium battery compartment (bottom of the camcorder)** (p. 10)

29 **PROGRAM AE dial** (p. 27)

30 **BATT (battery eject) knob** (p. 7)

31 **DST (Daylight Saving Time) button**

32 **AREA button**

33 **Battery mounting surface** (p. 7)

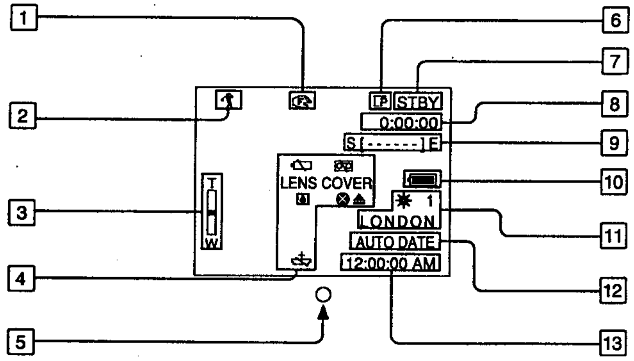
34 **Hooks for shoulder strap** (p. 42)

35 **COUNTER RESET button** (p. 16)

# Identifying the Parts

## Operation Indicators

For details on each indicator, refer to the pages indicated in the parenthesis.



1 Manual focusing (p. 25)

2 PROGRAM AE indicator (p. 26)

3 Power zoom indicator (p. 17)

4 Warning indicators (p. 47)

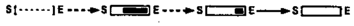
5 Recording lamp/Battery lamp

6 Lights up when playing back a tape recorded in LP mode

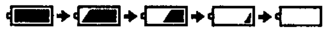
7 Tape transport mode (p. 15)

8 Tape counter (p. 16)

9 Remaining tape length indicator



10 Remaining battery indicator (p. 8)



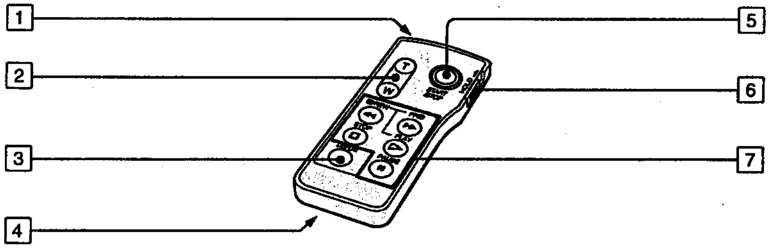
11 World clock indicator (p. 28)

12 AUTO DATE indicator (p. 15)

13 Date or Time (p. 12)

## Remote Commander

The buttons that have the same name on the Remote Commander and on the camcorder function identically.



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the POWER switch on the camcorder.

2 **Power zoom button**
The zooming speed is unchangeable in the Remote Commander.

3 **DISPLAY button**
Press to display the viewfinder screen indicators on the TV when you connect the camcorder to a TV. To erase the indicators, press again.

4 **Lithium battery holder** (p. 11)

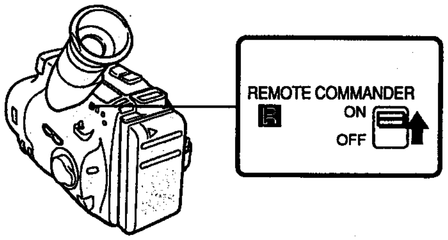
5 **START/STOP button**

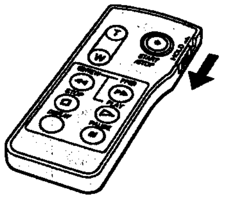
6 **HOLD Switch**
Slide it in the direction of the arrow to prevent any misoperation. Before using this Remote Commander, slide it in the opposite direction of the arrow.

7 **Tape transport buttons**

### Using the Remote Commander

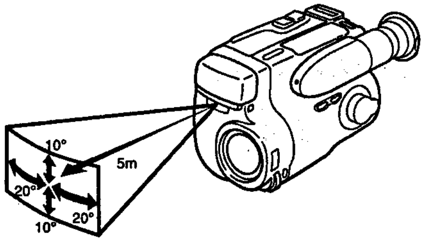
Make sure that the REMOTE COMMANDER switch on the camcorder is set to ON and that the HOLD switch on the Remote Commander is not working.





## Identifying the Parts

### Remote Control Direction

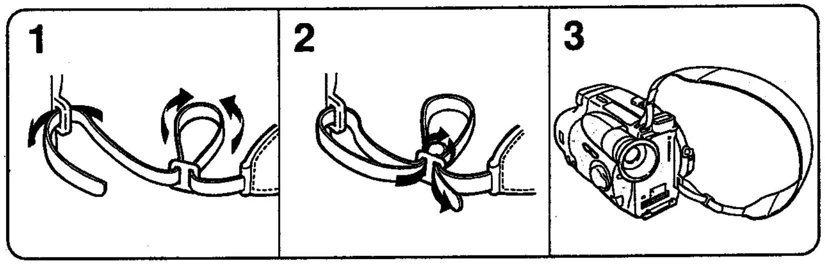


**Note on the Remote Commander**

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

### Attaching the Shoulder Strap

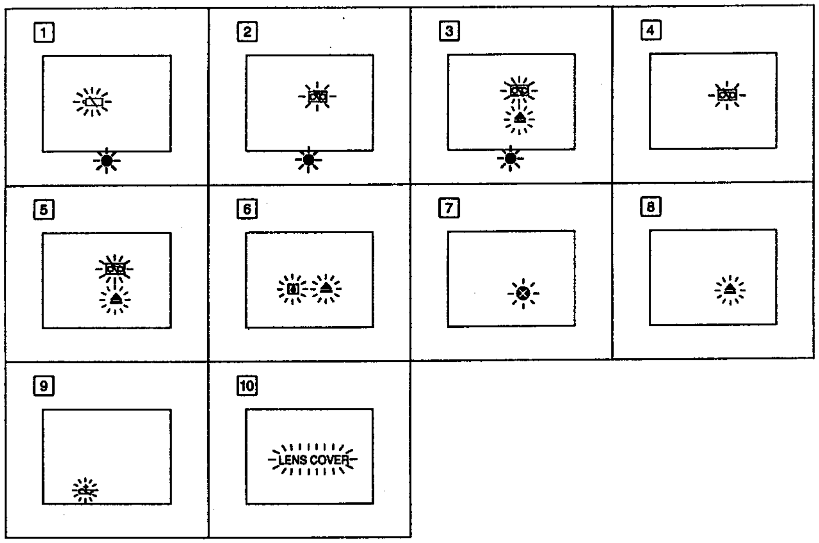
Attach the supplied shoulder strap to the hooks for the shoulder strap (p. 39).



## Indicators in the Viewfinder

### Warning Indicators

If indicators flash in the viewfinder or a caution lamp on the camcorder flashes, check the following:



1 The battery is weak or dead.
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 The tape is near the end.
The flashing is slow.

3 The tape has run out.
The flashing becomes rapid.

4 No tape has been inserted.

5 The tab on the tape is out (red).

6 Moisture condensation has occurred. (p. 33)

7 The video heads may be contaminated. (p. 31)

8 Some other trouble has occurred.
Disconnect the power source and contact your Sony dealer or local authorized facility.

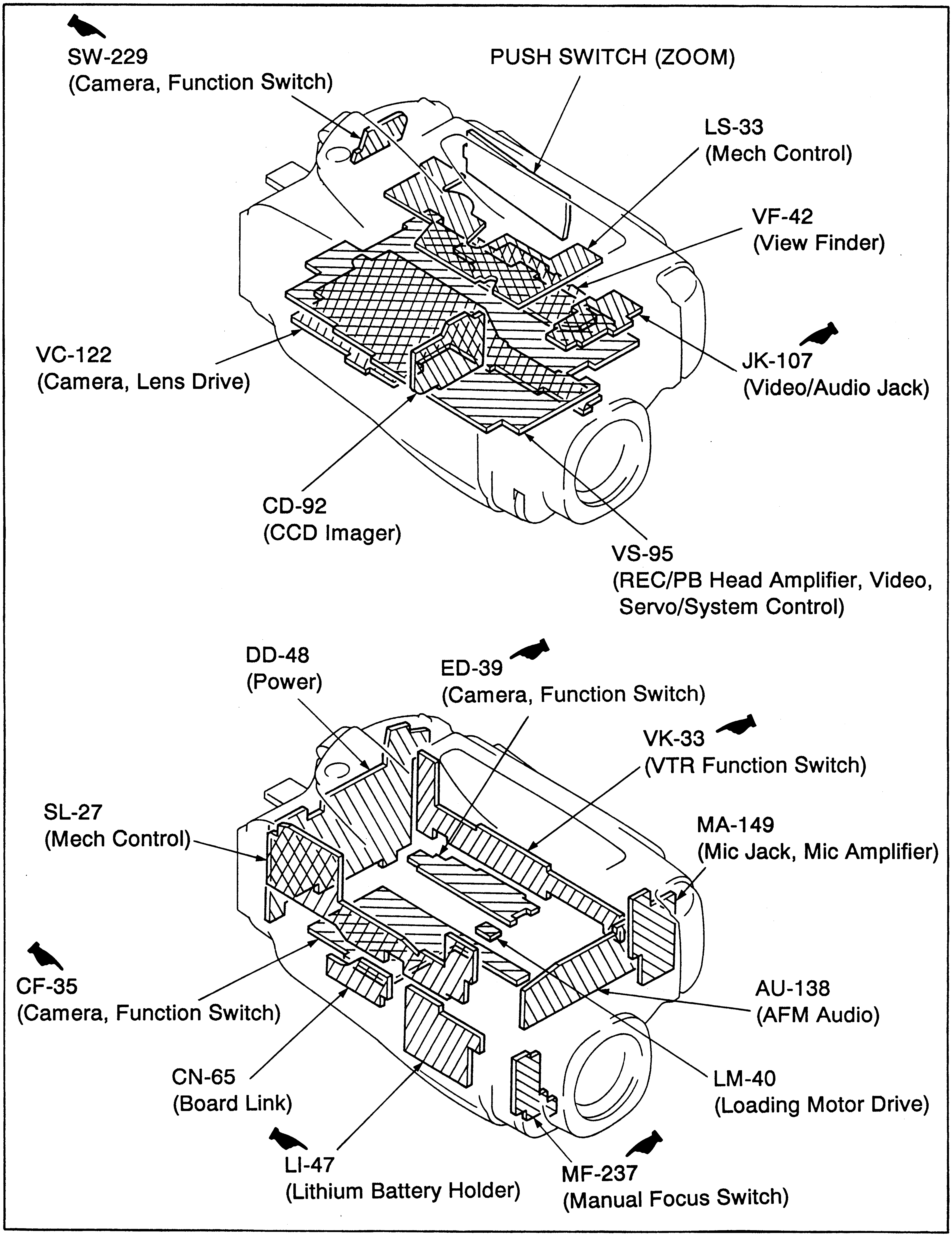
9 The lithium battery is weak or is not installed. (p. 11)

10 The LENS COVER switch is set to CLOSE.

# SECTION 3
# DIAGRAMS

Page. 28

## 3-1. CIRCUIT BOARDS LOCATION


SW-229
(Camera, Function Switch)
PUSH SWITCH (ZOOM)
LS-33
(Mech Control)
VF-42
(View Finder)
VC-122
(Camera, Lens Drive)
JK-107
(Video/Audio Jack)
CD-92
(CCD Imager)
VS-95
(REC/PB Head Amplifier, Video, Servo/System Control)
DD-48
(Power)
ED-39
(Camera, Function Switch)
VK-33
(VTR Function Switch)
SL-27
(Mech Control)
MA-149
(Mic Jack, Mic Amplifier)
CF-35
(Camera, Function Switch)
AU-138
(AFM Audio)
CN-65
(Board Link)
LM-40
(Loading Motor Drive)
LI-47
(Lithium Battery Holder)
MF-237
(Manual Focus Switch)

# SECTION 5
# EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

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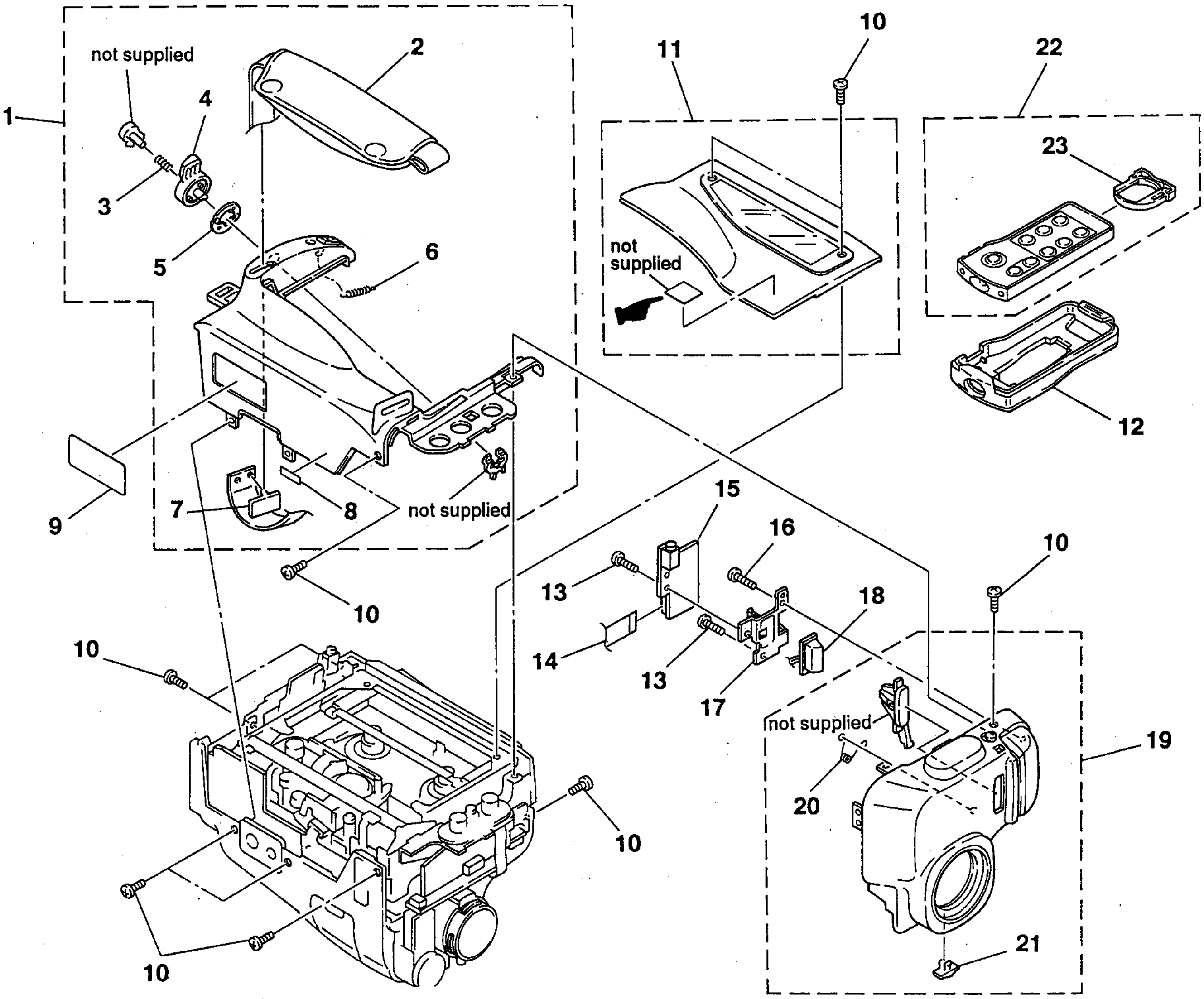
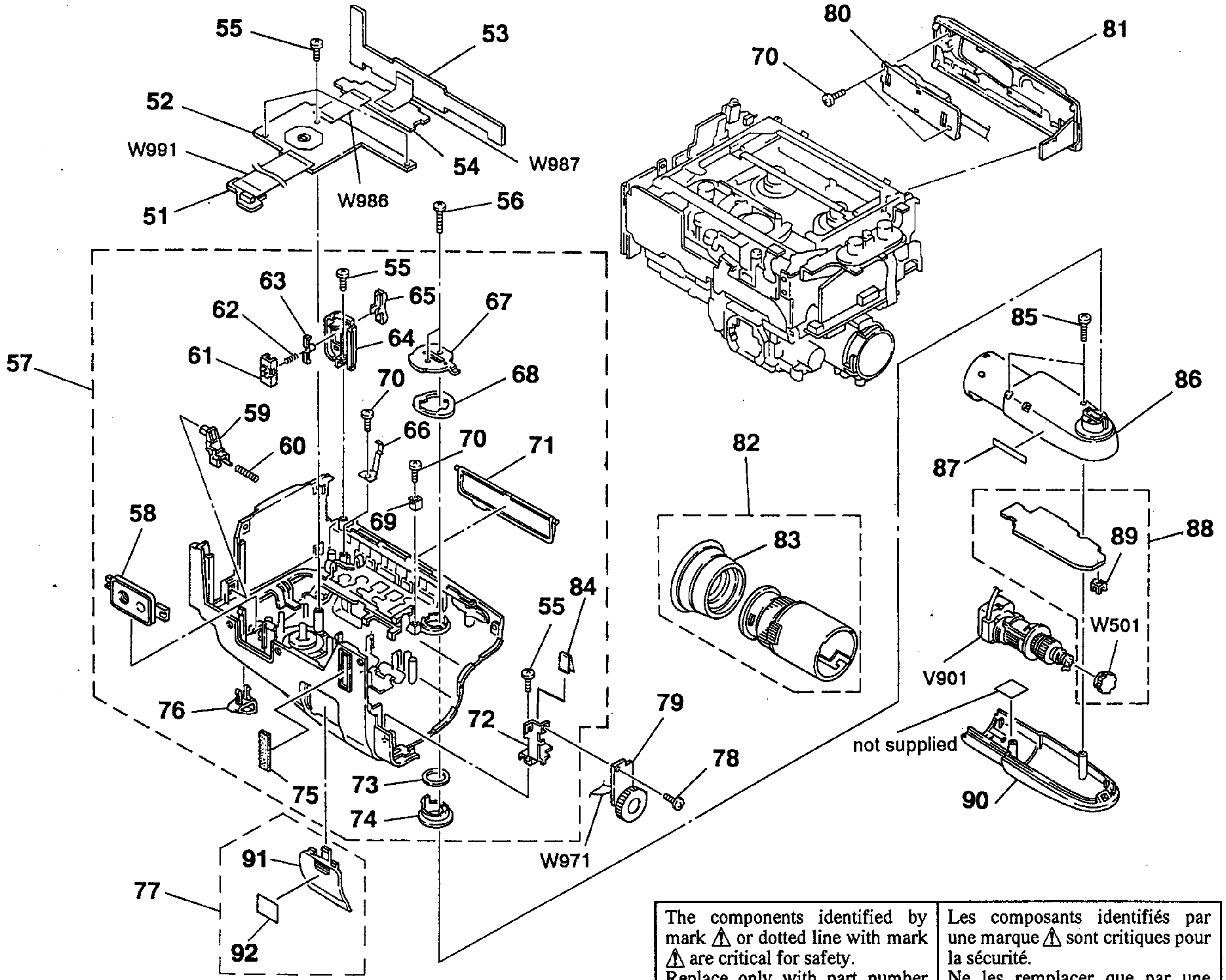
## 5-1. CABINET (L) AND F PANEL ASSEMBLIES



| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | X-3941-893-1 | CABINET (L) ASSY (TR21:US) | |
| 1 | X-3942-282-1 | CABINET (L) ASSY (TR21:CND/TR212/TR212PK) | |
| 2 | 3-736-807-01 | BELT, GRIP | |
| 3 | 3-578-221-00 | SPRING, COMPRESSION | |
| 4 | 3-942-985-01 | KNOB, STAND-BY | |
| 5 | 3-736-364-01 | SPRING | |
| 6 | 4-602-490-00 | SPRING, TENSION | |
| 7 | 3-942-895-01 | STOPPER, BELT | |
| ∗ 8 | 3-704-367-01 | LABEL (TR21:US) | |
| ∗ 9 | 3-955-547-01 | LABEL, MODEL NUMBER (U/C)(TR21) | |
| ∗ 9 | 3-955-550-01 | LABEL, MODEL NUMBER(E32)(TR212/TR212PK) | |
| 10 | 3-719-381-01 | SCREW (M2X4) | |
| 11 | X-3943-303-1 | LID ASSY, CASSETTE (TR212/TR212PK) | |
| 11 | X-3943-304-1 | LID ASSY, CASSETTE (TR21) | |
| 12 | 3-943-154-11 | HOLDER (B), REMOTE CONTROL | |
| 13 | 3-713-790-21 | SCREW (M2X6), TAPPING, P3 | |
| 14 | 1-696-487-11 | CABLE, FLAT (FFC-90) | |
| ∗ 15 | A-7063-745-A | MA-149L BOARD, COMPLETE | |
| 16 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| ∗ 17 | 3-949-000-01 | RETAINER, MICROPHONE | |
| 18 | A-7091-800-A | MICROPHONE UNIT | |
| 19 | X-3943-305-1 | PANEL ASSY, F | |
| 20 | 3-947-357-01 | SPRING, TORSION | |
| 21 | 3-945-269-01 | KNOB, S | |
| 22 | 1-467-367-21 | REMOTE COMMANDER (RMT-704) | |
| 23 | 3-708-412-01 | LID, REMOTE COMMANDER | |

## 5-2. CABINET (R) AND EVF ASSEMBLIES



| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * 51 | A-7071-906-A | CN-65L BOARD, COMPLETE | |
| * 52 | A-7071-895-A | CF-35L BOARD, COMPLETE | |
| * 53 | 1-648-680-11 | VK-33 BOARD | |
| * 54 | A-7071-894-A | ED-39L BOARD, COMPLETE | |
| 55 | 4-908-792-71 | SCREW (B2X6), TAPPING, P1 | |
| 56 | 3-740-546-41 | SCREW (M2X10) | |
| 57 | X-3943-306-1 | CABINET (R) ASSY (TR21) | |
| 57 | X-3943-346-1 | CABINET (R) ASSY (TR212) | |
| 58 | 3-942-911-01 | SCREW, TRIPOD | |
| 59 | 3-948-990-01 | LOCK, BATTERY | |
| 60 | 3-426-508-00 | SPRING, COMPRESSION | |
| 61 | 3-948-839-01 | BLIND, POWER | |
| 62 | 3-303-973-01 | SPRING, COMPRESSION | |
| 63 | 3-946-186-01 | PUSH BUTTON, POWER | |
| 64 | 3-948-975-01 | BASE, POWER | |
| 65 | 3-946-248-01 | BUTTON, POWER | |
| 66 | 3-948-988-01 | SPRING, LEAF, VK | |
| 67 | 3-747-111-01 | PLATE, LOCK, TILT | |
| 68 | 3-747-110-01 | SPRING, LEAF, TILT | |
| 69 | 3-747-178-01 | REINFORCEMENT, TILT LOCK | |
| 70 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| 71 | 3-948-976-01 | DOOR, CONTROL | |
| * 72 | 3-948-987-01 | FRAME, MF | |
| 73 | 3-747-112-01 | RING, TILT | |
| 74 | 3-747-109-01 | SLEEVE, EVF | |
| 75 | 3-949-008-01 | SHEET, FOOT | |
| 76 | 3-948-989-01 | KNOB, BATTERY | |
| 77 | X-3942-113-1 | LID ASSY, BATTERY, LITHIUM (TR21:US) | |
| 78 | 3-713-786-51 | SCREW (M2X3) | |
| * 79 | A-7071-656-A | MF-237 BOARD, COMPLETE (MF-191) | Note |
| 80 | 1-692-257-11 | SWITCH, PUSH (ZOOM) | |
| 81 | X-3941-894-1 | LID ASSY, LS | |
| 82 | X-3941-603-1 | HOLDER ASSY, FINDER | |
| 83 | 3-946-426-01 | EYE CUP | |
| 84 | 2-532-810-00 | CUSHION, 15X5X0.3 | |
| 85 | 3-713-790-31 | SCREW (M2X8), TAPPING, P3 | |
| 86 | X-3940-706-1 | CABINET (L) ASSY, EVF | |
| * 87 | 3-744-894-11 | LABEL, EVF | |
| * 88 | A-7063-183-A | VF-42 BOAARD, COMPLETE (3120) | |
| 89 | 3-942-888-01 | HOLDER, LID | |
| 90 | 3-943-077-01 | CABINET (R), EVF | |
| 91 | 3-948-843-01 | LID, BATTERY CASE, LITHIUM | |
| 92 | 3-704-256-01 | LABEL, CAUTION (TR21:US) | |
| ⚠V901 | 1-452-565-11 | CRT ASSY (M01KKD70WB) | |
| ⚠W501 | 1-540-019-21 | SOCKET ASSY, CRT | |
| W971 | 1-696-484-11 | CABLE, FLAT (FFC-87) | |
| W986 | 1-696-621-11 | CABLE FLEXIBLE | |
| W987 | 1-696-622-11 | CABLE FLEXIBLE (FP-591) | |
| W991 | 1-696-483-11 | CABLE FLAT (FFC-86) | |

**Note:** The boards mounted (JK-107, LI-47, MF-237 and SW-229) have been replaced with JK-91, LI-44, MF-191 and SW-205 of CCD-TR31/TR303/TR303PK and provided.

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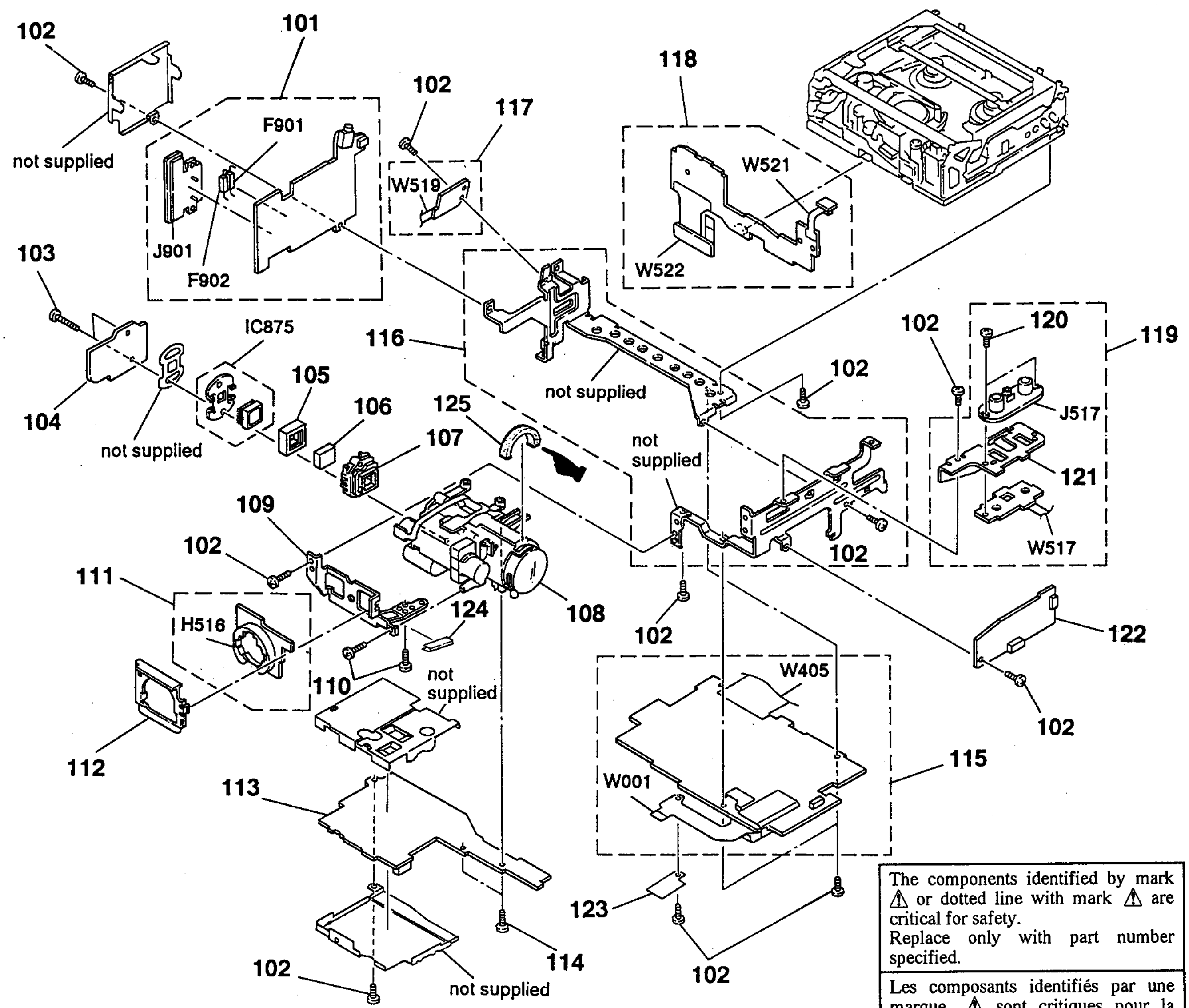
## 5-3. MAIN BOARDS ASSEMBLY


102
101
not supplied
F901
J901
F902
103
102
117
W519
118
W521
W522
116
IC875
105
104
not supplied
106
125
107
not supplied
102
not supplied
102
120
119
J517
121
W517
102
109
102
111
H516
124
108
102
110
not supplied
122
102
W405
112
113
115
W001
123
102
114
not supplied
102

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

Be sure to read "Note on the CCD imager replacement" on page 81 of CCD-TR31/TR303/TR303PK service manual when changing the CCD imager.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * 101 | A-7063-743-A | DD-48L BOARD, COMPLETE | |
| 102 | 3-713-786-51 | SCREW (M2X3) | |
| 103 | 3-947-268-01 | SCREW (B TIGHT)(2), TAPPING | |
| * 104 | A-7063-739-A | CD-92L BOARD, COMPLETE | |
| 105 | 3-946-857-01 | RUBBER (S), SEAL | |
| 106 | 1-547-558-21 | FILTER BLOCK, OPTICAL | |
| 107 | 3-946-856-01 | ADAPTOR (H), CCD FITTING | |
| 108 | 1-547-548-11 | LENS, ZOOM (VCL-6210WC) | |
| * 109 | 3-949-001-01 | FRAME, LENS | |
| 110 | 3-713-790-21 | SCREW (M2X6), TAPPING, P3 | |
| * 111 | A-7071-652-A | LI-47 BOARD, COMPLETE (LI-44) Note | |
| 112 | 3-948-842-01 | HOLDER, LI | |
| * 113 | A-7063-740-A | VC-122L BOARD, COMPLETE | |
| 114 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| * 115 | A-7063-717-A | VS-95L BOARD, COMPLETE | |
| * 116 | X-3942-209-1 | FRAME (UPPER LOWER) ASSY | |
| * 117 | A-7071-651-A | SW-229 BOARD, COMPLETE (SW-205) Note | |
| * 118 | A-7063-742-A | SL-27L BOARD, COMPLETE | |
| * 119 | A-7063-266-A | JK-107 BOARD, COMPLETE (JK-91) Note | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 120 | 3-719-381-01 | SCREW (M2X4) | |
| * 121 | 3-948-974-01 | FRAME (M), JACK | |
| * 122 | A-7063-817-A | AU-138L BOARD, COMPLETE | |
| 123 | 3-951-136-02 | SHIELD, DRUM | |
| 124 | 3-846-312-01 | SPACER | |
| 125 | 3-954-580-01 | CUSHION, LENS | |
| ⚠F901 | 1-532-778-21 | FUSE | |
| ⚠F902 | 1-532-778-21 | FUSE | |
| H516 | 1-550-104-32 | HOLDER, BATTERY | |
| IC875 | A-7030-368-A | CCD BLOCK ASSY (054 SERVICE) | |
| J517 | 1-537-142-21 | TERMINAL BOARD | |
| J901 | 1-537-281-41 | TERMINAL BOARD | |
| W001 | 1-696-489-11 | CABLE, FLEXIBLE (FP-588) | |
| W405 | 1-644-285-11 | FP-572 FLEXIBLE BOARD | |
| W517 | 1-696-482-11 | CABLE, FLAT (FFC-85) | |
| W519 | 1-696-488-11 | CABLE, FLAT (FFC-92) | |
| W521 | 1-642-186-11 | FP-437 FLEXIBLE BOARD | |
| W522 | 1-696-490-11 | CABLE, FLEXIBLE (FP-589) | |

CF-35L ED-39L JK-107

LI-47 MF-237

# SECTION 6
# ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: $\mu$ , for example:
  uA...: $\mu$A..., uPA...: $\mu$PA...,
  uPB...: $\mu$PB..., uPC...: $\mu$PC...,
  uPD...: $\mu$PD...
- CAPACITORS
  uF : $\mu$F
- COILS
  uH : $\mu$H

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7071-895-A | CF-35L BOARD, COMPLETE<br>**********************<br>(Ref. No. 7,000 Series) | |
| | | < CONNECTOR > | |
| CN993 | 1-566-540-11 | CONNECTOR, FPC (NON ZIF) 8P | |
| | | < DIODE > | |
| D992 | 8-719-404-46 | DIODE MA110 | |
| | | < RESISTOR > | |
| R991 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R992 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| | | < SWITCH > | |
| S993 | 1-692-111-11 | SWITCH, KEY BOARD (DATE) | |
| S995 | 1-692-111-11 | SWITCH, KEY BOARD (COUNTER RESET) | |
| S996 | 1-692-111-11 | SWITCH, KEY BOARD (TIME) | |
| S997 | 1-692-024-21 | SWITCH, ROTARY (PROGRAM AE) | |

************************************************************

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7071-894-A | ED-39L BOARD, COMPLETE<br>**********************<br>(Ref. No. 8,000 Series) | |
| | | < DIODE > | |
| D987 | 8-719-404-40 | DIODE MA121 | |
| D988 | 8-719-420-14 | DIODE MA8082-M | |
| D989 | 8-719-420-14 | DIODE MA8082-M | |
| D990 | 8-719-420-14 | DIODE MA8082-M | |
| | | < SWITCH > | |
| S987 | 1-692-111-11 | SWITCH, KEY BOARD (SUMMER TIME) | |
| S988 | 1-571-275-31 | SWITCH, SLIDE (REMOTE COMMANDER) | |
| S989 | 1-692-111-11 | SWITCH, KEY BOARD (AREA) | |
| S990 | 1-571-275-31 | SWITCH, SLIDE (EDIT) | |
| | | < FLEXIBLE BOARD > | |
| W986 | 1-696-621-11 | FP-590 FLEXIBLE BOARD | |

************************************************************

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | A-7063-266-A | JK-107 BOARD, COMPLETE (JK-91) Note<br>**********************<br>(Ref. No. 3,000 Series) | |
| | 3-719-381-01 | SCREW (M2X4) | |
| * | 3-948-974-01 | FRAME (M), JACK | |
| | | < JACK > | |
| J517 | 1-537-142-21 | TERMINAL BOARD | |
| | | < FLAT CABLE > | |
| W517 | 1-696-482-11 | CABLE, FLAT (FFC-85) | |

************************************************************

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | A-7071-652-A | LI-47 BOARD, COMPLETE (LI-44) Note<br>*********************<br>(Ref. No. 4,000 Series) | |
| | | < CONNECTOR > | |
| * CN516 | 1-580-055-21 | PIN, CONNECTOR 2P | |
| | | < HOLDER > | |
| H516 | 1-550-104-32 | HOLDER, BATTERY | |

************************************************************

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7071-656-A | MF-237 BOARD, COMPLETE (MF-191) Note<br>*********************<br>(Ref. No. 5,000 Series) | |
| | | < DIODE > | |
| D971 | 8-719-404-46 | DIODE MA110 | |
| | | < RESISTOR > | |
| R971 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| | | < SWITCH > | |
| S971 | 1-692-088-41 | SWITHC, TACTILE (FOCUS) | |
| S972 | 1-241-865-11 | RES, VAR, CARBON 10K/10K<br>(LENS OPEN/CLOSE) | |
| S973 | 1-572-467-21 | SWITCH, PUSH (1 KEY) (FOCUS LING) | |

## MF-237 SW-229 VK-33 VS-95

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < FLAT CABLE > | |
| W971 | 1-696-484-11 | CABLE, FLAT (FFC-87) | |
| | | ************************************************************ | |
| | A-7071-651-A | SW-229 BOARD, COMPLETE (SW-205) Note<br>*********************<br>(Ref. No. 7,000 Series) | |
| | | < SWITCH > | |
| S519 | 1-553-977-11 | SWITCH, SLIDE (STBY) | |
| S520 | 1-571-315-11 | SWITCH, KEY BOARD (START/STOP) | |
| | | < FLAT CABLE > | |
| W519 | 1-696-488-11 | CABLE, FLAT (FFC-92) | |
| | | ************************************************************ | |
| * | 1-648-680-11 | VK-33 BOARD (Ref. No. 9,000 Series)<br>*********** | |
| | | < DIODE > | |
| D976 | 8-719-404-46 | DIODE MA110 | |
| | | < SWITCH > | |
| S976 | 1-572-921-31 | SWITCH, KEY BOARD (STOP) | |
| S977 | 1-692-260-11 | SWITCH, SLIDE (POWER) | |
| S978 | 1-572-921-31 | SWITCH, KEY BOARD (EDIT SEARCH (-)) | |
| S979 | 1-572-921-31 | SWITCH, KEY BOARD (REW) | |
| S980 | 1-572-921-31 | SWITCH, KEY BOARD (PB) | |
| S981 | 1-572-921-31 | SWITCH, KEY BOARD (EDIT SEARCH (+)) | |
| S983 | 1-572-921-31 | SWITCH, KEY BOARD (FF) | |
| S984 | 1-572-921-31 | SWITCH, KEY BOARD (PAUSE) | |
| | | < FLEXIBLE BOARD > | |
| W987 | 1-696-622-11 | PF-591 FLEXIBLE BOARD | |
| | | ************************************************************ | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ACCESSORIES & PACKING MATERIALS<br>******************************* | |
| | 1-467-367-21 | REMOTE COMMANDER (RMT-704) | |
| | 3-738-517-01 | BELT (S), SHOULDER (TR21) | |
| | 3-757-481-21 | MANUAL, INSTRUCTION (TR21)(English) | |
| | 3-757-481-31 | MANUAL, INSTRUCTION (TR21:CND)(French) | |
| | 3-757-482-11 | MANUAL, INSTRUCTION (TR212/TR212PK)<br>(English, Spanish) | |
| | 3-757-482-41 | MANUAL, INSTRUCTION (TR212)(Chinese) | |
| * | 3-795-581-21 | SAFEGUARD (SONY), IMPORTANT (TR21:US) | |
| * | 3-949-004-01 | CUSHION, ACC (TR21/TR212) | |
| * | 3-949-005-01 | CUSHION (LOWER)(TR21/TR212) | |
| * | 3-950-791-01 | CUSHION (FRONT), INNER (TR212PK) | |
| * | 3-950-792-01 | CUSHION (REAR), INNER (TR212PK) | |
| * | 3-955-642-01 | INDIVIDUAL CARTON (TR21) | |
| * | 3-955-642-11 | INDIVIDUAL CARTON (TR212) | |
| * | 3-956-636-01 | INDIVIDUAL CARTON (TR212PK) | |
| | 3-956-650-01 | CASE, CARRYING (TR212PK) | |
| | A-6768-253-A | RFU ADAPTOR (RFU-90UC) | |
| | A-6776-142-A | LIGHT ASSY, VIDEO (TR212PK) | |
| ** | AC-V25/V25A | AC POWER ADAPTOR | |
| *** | NP-55 | BATTERY PACK (TR21/TR212) | |
| *** | NP-66H | BATTERY PACK (TR212PK) | |

Note.

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY

************************************************************

**Note:** The boards mounted (JK-107, LI-47, MF-237 and SW-229) have been replaced with JK-91, LI-44, MF-191 and SW-205 of CCD-TR31/TR303/TR303PK and provided.

- Only the following parts are different for the VS-95 board.

| Ref. No. | Part No. | Description | Location (CCD-TR31/TR303/TR303PK Supp-2) PRINTED | Location (CCD-TR31/TR303/TR303PK Supp-2) SCHEMATIC | (CCD-TR31/TR303/TR303PK Supp-2) | CCD-TR21/TR212/TR212PK |
|---|---|---|---|---|---|---|
| * | A-7063-717-A | VS-95 BOARD, COMPLETE (Ref. No 4,000 Series) | - | - | ○ | × |
| * | A-7063-260-A | VS-95 BOARD, COMPLETE (Ref. No 4,000 Series) | - | - | × | ○ |
| R492 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | H-8 | H-7 | ○ | × |

(SERVO/SYSCON BLOCK)

○: MOUNT
×: NO MOUNT

Sony Corporation
Personal Video Group

Published by CV Quality Engi

# CCD-TR31/TR303/TR303PK
## RMT-507

# SERVICE MANUAL

Remote commander is available as a unit. But as individual parts the battery case lid of commander is only avaiable.

*US Model*
*Canadian Model*
*CCD-TR31*
*E Model*
*CCD-TR303/TR303PK*

Video8
Handycam

A MECHANISM

**For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV" (9-973-199-11).**

## SPECIFICATIONS

### System

| | |
|---|---|
| Video recording system | Two rotary heads, Helical scanning FM system |
| Audio recording system | Two rotary head, FM system |
| Video signal | NTSC color, EIA standards |
| Usable cassette | 8 mm video format cassette (standard 8 mm) |
| Tape speed | SP mode: Approx. 1.43 cm (19/32 inches) /s<br>LP mode: Approx. 0.72 cm (5/16 inches) /s (playback only) |
| Recording time | SP mode: 2 h (P6-120) |
| Playback time | SP mode: 2 h (P6-120)<br>LP mode: 4 h (P6-120) |
| Fastforward/rewind time | Approx. 6 min 30 s (P6-120) |
| Image device | CCD (Charge Coupled Device) |
| Viewfinder | Electronic viewfinder (monochrome) |
| Lens | Combined 10 × power zoom lens f = 6.2 to 62 mm (1/4 to 1 7/16 inches)<br>F 1.6 to F2.9<br>(45 to 450 mm when converted to a 35 mm still camera)<br>Filter diameter 37 mm (1 1/2 inches)<br>TTL autofocus system inner focus wide macro system |
| Color temperature | Auto |
| Minimum illumination | 1 lx (F 1.6) |
| Illumination range | 1 lx to 100,000 lx |
| Recommended illumination | More than 100 lx |

### Input and output connectors

| | |
|---|---|
| Video output | Phono jack, 1 Vp-p, 75 Ω, unbalanced, sync negative |
| Audio output | Phono jacks<br>−7.5 dBs, (at load impedance 47 kΩ) impedance less than 2.2 kΩ |
| RFU DC OUT | Special minijack, DC 5 V |
| ◐ Remote jack | Stereo mini-minijack (Ø 2.5 mm) |
| MIC jack | minijack, −66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kΩ (Ø 3.5 mm) |

— Continued on next page —

MICROFILM

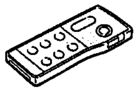
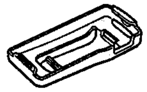
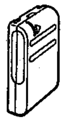
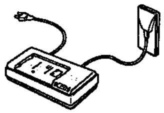
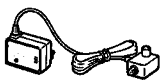
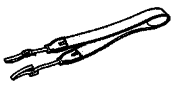
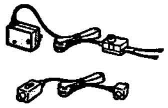
**8 VIDEO CAMERA RECORDER**

**SONY®**

**General**

Power requirements
On battery mounting surface
6.0 V (battery pack)
7.5 V (AC power adaptor)
Average power consumption
5.3 W (camera recording)
including the viewfinder
Installation Vertically, Horizontally
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
−20 °C to +60 °C (−4 °F to 140 °F)
Dimensions Approx. 109 × 109 × 178 mm (w/h/d)
(4 3/8 × 4 3/8 × 7 1/8 inches)
Mass About 770 g (1 lb 11 oz) excluding the battery pack, lithium battery, cassette, and shoulder strap
About 1,000 g (2 lb 3 oz) including the battery pack NP-55, lithium battery CR2025, cassette P6-120, and shoulder strap
Microphone Electret condenser microphone, monaural type

Supplied accessories

| | | |
|---|---|---|
| • Wireless Remote Commander (1)  | • Remote Commander holder (1)  | • Battery pack NP-55 (1)  |
| • AC power adaptor AC-V35 (1)  | • Lithium battery CR2025 (2) (for camcorder/for the Remote Commander) | • RFU adaptor RFU-90UC (1)  US/Canadian model |
| • Shoulder strap (1)  | • RFU adaptor RFU-89NA with an antenna selector (1)  E model | |

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

**ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!**

**LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.**

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There is the color reproduction standard frame at the back of the book.

# SERVICE NOTE

## [SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

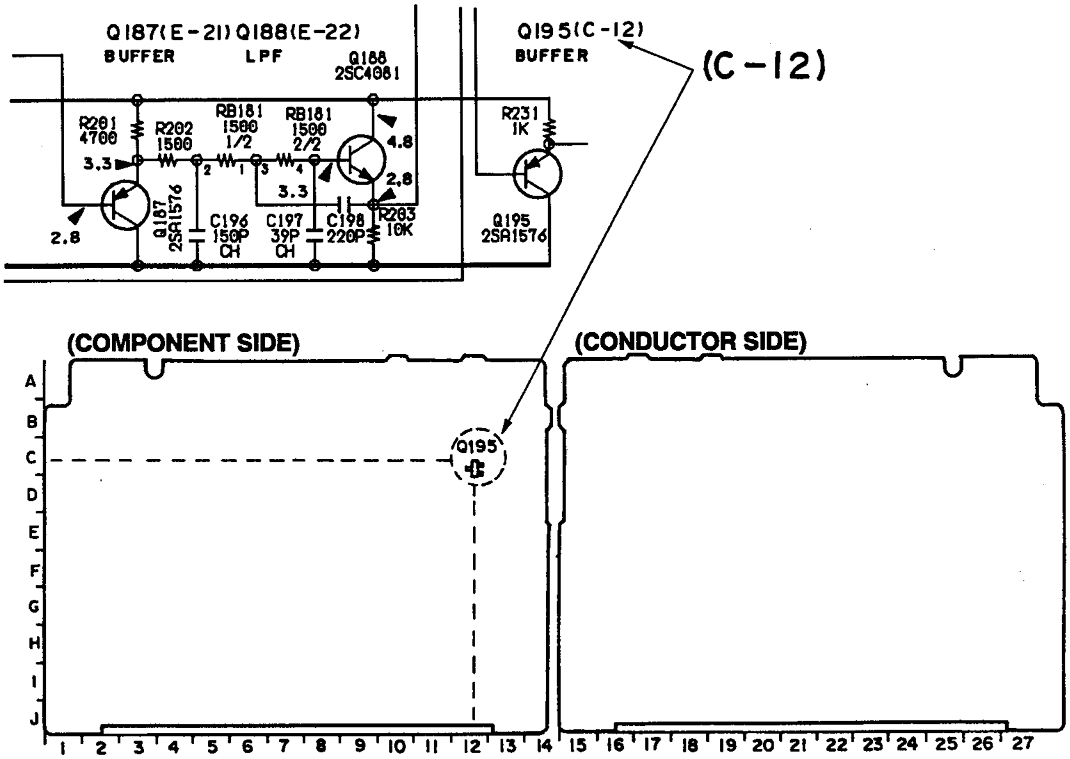
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

## [PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 95 and 107.)
This diagram is useful for repair.

## [SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red as shown below. This enables to find the location on the board easily when servicing.



Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
Q195(C-12)
BUFFER
(C-12)
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
R231
1K
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
E
F
G
H
I
J
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## [HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

### Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [ ✱ ] mark is flashing in the viewfinder at this time, head clogs are occurred.

### Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

### Remedy

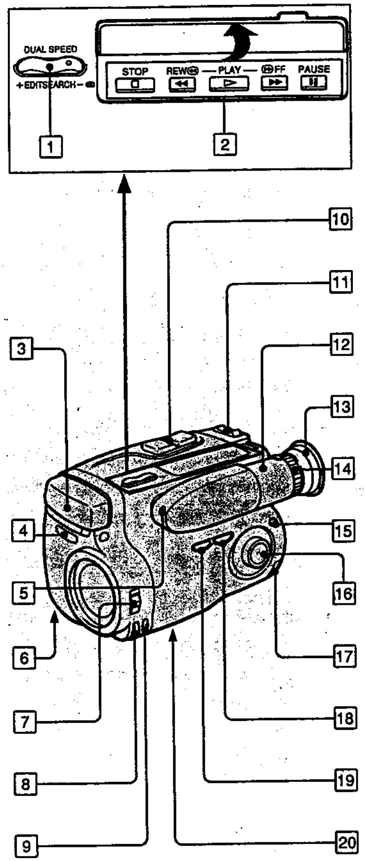
### [Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

# SECTION 1
# GENERAL

**This section is extracted from CCD-TR31 instruction manual.**

## Identifying the Parts



For details on the use of each part, refer to the pages indicated in the parenthesis.

1 EDITSEARCH button (27)

2 Tape transport buttons (19), (37)
  - □ STOP (stop)
  - ◀◀ REW (rewind)
  - ▷ PLAY (palyback)
  - ▶▶ FF (fast forward)
  - ❚❚ PAUSE (pause)

3 Built-in microphone (monaural)

4 Remote sensor (20)

5 Camera recording/battery lamp (16)

6 Hook for shoulder strap

7 LENS COVER switch (14)

8 Focus dial (32)

9 FOCUS button (32)

10 Power zoom button (17), (32)

11 POWER switch

12 Viewfinder (13)

13 Eyecup

14 Viewfinder lens adjustment ring (13)

15 FADER button (34)

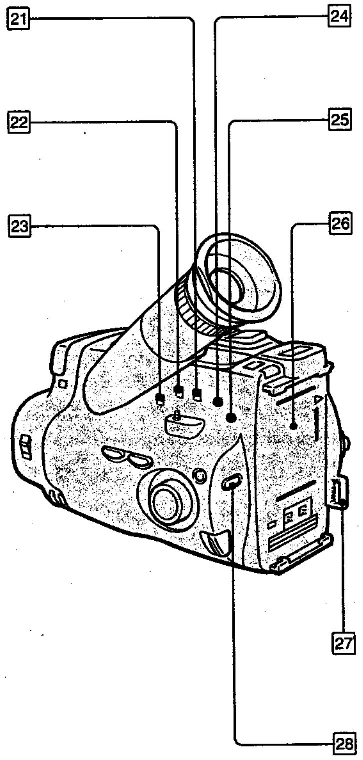
16 PROGRAM AE dial (33)

17 BATT (battery eject) knob (9)

18 TIME (NEXT) button (10), (26), (29)

19 DATE (+) button (10), (26), (29)

20 Lithium battery compartment (6)



21 EDIT switch (39)

22 REMOTE COMMANDER ON/OFF switch (20)

23 BEEP switch (12)

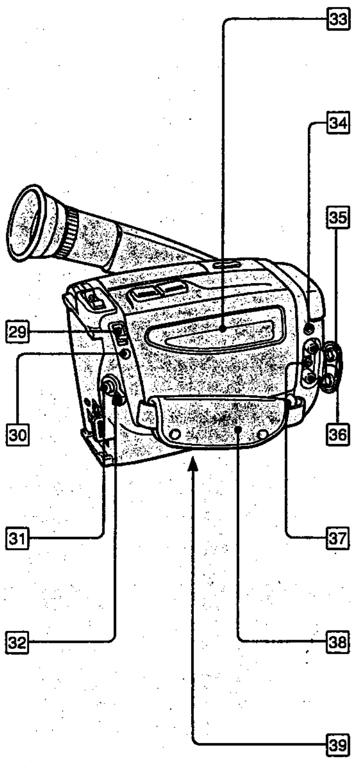
24 DST (daytime saving) button (11)

25 AREA button (29)

26 Battery mounting surface (9)

27 Hook for shoulder strap

28 COUNTER RESET button (15)


29
30
31
32
33
34
35
36
37
38
39

29 EJECT button (12)

30 ⓫ remote control jack (stereo mini-minijack)

31 START/STOP button (15)

32 STANDBY switch (13), (15)

33 Cassette compartment (12)

34 MIC jack (PLUG IN POWER) (monaural minijack) (28)

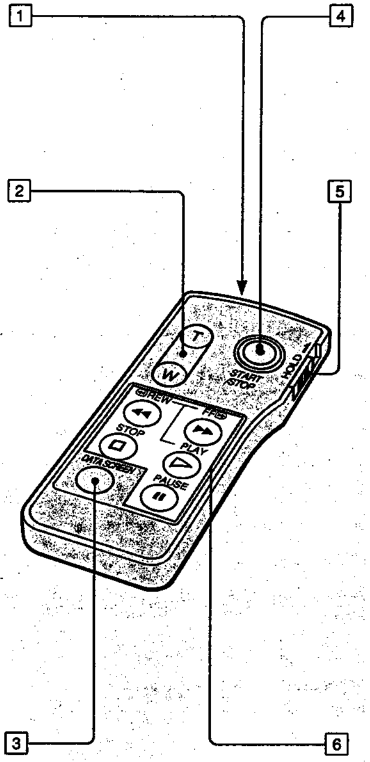
35 Jack cover

36 VIDEO/AUDIO output jacks (phono jack) (35)

37 RFU DC OUT (DC output) jack (18)

38 Grip strap cover

39 Tripod receptacle


1
4
2
5
T
W
START/STOP
HOLD
REW
FF
STOP
PLAY
DATA SCREEN
PAUSE
3
6

## Remote Commander

1 Transmitter

2 Power zoom button (17), (32)

3 DATA SCREEN button (37)

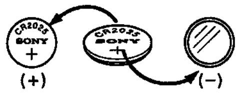
4 START/STOP button

5 HOLD switch (20)

6 Tape transport buttons (19), (37)
◀◀ REW (rewind) button
▶▶ FF (fast forward) button
☐ STOP button
▷ PLAY (playback) button
❚❚ PAUSE button

# Inserting the Lithium Batteries

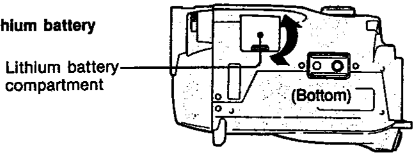
Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander.
Well, the lithium battery has a positive (+) side and a negative (−) side as illustrated below. **Be sure to install the lithium battery with the positive side facing out.**



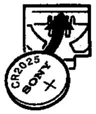
## Inserting the Lithium Battery into the Camcorder

To activate the clock and the world clock, you must insert a lithium battery. Make sure you use one of the supplied lithium batteries.

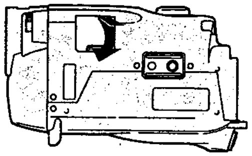
**1 Detach the lid of the lithium battery compartment.**



**2 Install one of the supplied lithium batteries with the positive (+) side facing out.**



**3 Replace the lid.**

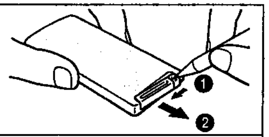


**To change the lithium battery**
Detach the lid of the lithium battery compartment, and replace the lithium battery with a new one.
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, resetting of the date and time will be necessary.

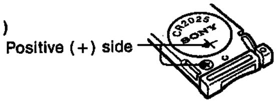
## Inserting the Lithium Battery into the Remote Commander

First, you have to insert the lithium battery into the Remote Commander. Use one of the supplied CR2025 lithium batteries.

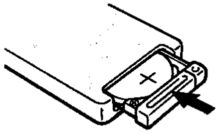
**1 Pull out the lithium battery holder from the Remote Commander.**



**2 Insert the lithium battery with the positive (+) side facing upward.**



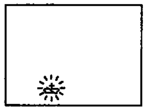
**3 Put the lithium battery holder back into the Remote Commander.**



**To replace the lithium battery**
Remove the lithium battery holder from the Remote Commander, and pull out the lithium battery, and insert a new one. **Replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.**

**Lithium battery life**
The battery for the camcorder lasts for about 1 year, and the battery for the Remote Commander lasts for about 6 months under normal operation. When the lithium battery becomes weak, the ⚠ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA.

In the viewfinder



**WARNING**
Battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

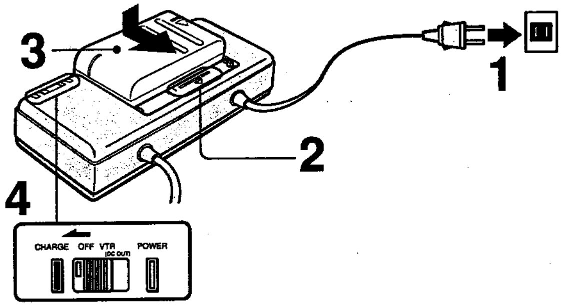
**Caution**
**Keep the lithium battery out of the reach of children.**
**Should the battery be swallowed, consult a doctor immediately.**

# Charging and Installing the Battery Pack

Before you can use your camcorder, you first need to charge and install the battery pack.

## Charging the Battery Pack

To charge the battery pack:



| | |
|---|---|
| **1** | **Plug the AC power adaptor into a wall outlet.** |
| **2** | **Align the right side of the battery pack with the line on the AC power adaptor.** |
| **3** | **Push down and slide the battery pack in the direction of the arrow.** |
| **4** | **Set the selector to "CHARGE" position.** |

When charging is finished, the charge lamp goes out.

| Type of battery pack | NP-55 (supplied) | NP-77HD | NP-77H | NP-77 | NP-66H | NP-55H |
|---|---|---|---|---|---|---|
| Required charging time | 60 | 140 | 140 | 120 | 115 | 70 |
| Battery life | 60 | 140 | 140 | 120 | 115 | 70 |

(approx. minutes using AC-V35)

### Important!

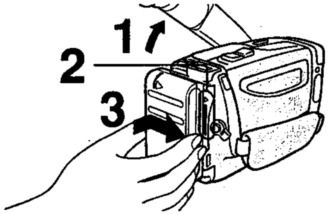
**Use the battery completely before re-charging!**

Before you recharge the battery, make sure the battery has been used (discharged) completely. Excessive charging may reduce the charging capacity of the battery.

To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery attached, and leave the camcorder until the ▭ indicator and a red lamp flash in the viewfinder.

## Installing the Battery Pack

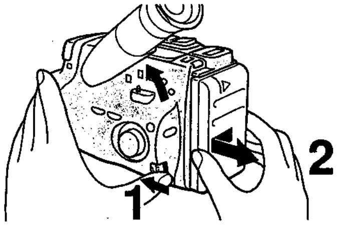
When you have finished charging the battery, install the battery pack as follows:



| | |
|---|---|
| **1** | **Lift up the viewfinder.** |
| **2** | **Align the right side of the battery pack with the white line on the camcorder.** |
| **3** | **Slide the battery pack to the right.** |

**To remove the battery pack**

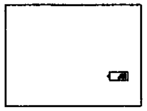
Lift up the viewfinder, and press BATT in the direction of arrow (1) and, at the same time, slide out the battery pack to the left (2).



**Remaining battery indicator**

You can check the remaining battery capacity with the remaining battery indicator in the viewfinder. The decreasing white bar indicates decreasing battery power.

In the viewfinder

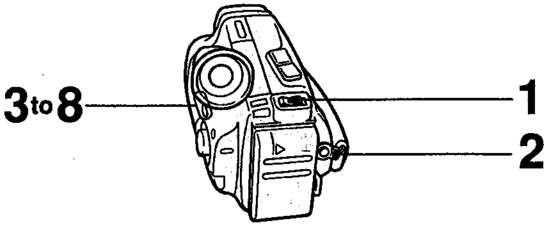


**Note**

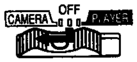
The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the NP-77HD battery pack (not supplied). The indicator of NP-77HD is more accurate.

# Setting the Date and Time

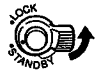
You need to set the camcorder's date and time to put the correct ones onto your video. Make sure that the power source and lithium battery are installed. Make settings looking at the viewfinder. About the world clock, see page 29.



**1** While pressing the small green button on the POWER switch, slide it to CAMERA.

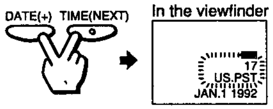

CAMERA
OFF
PLAYER

**2** Turn the STANDBY switch up.


LOCK
STANDBY

**3** Press DATE (+) and TIME (NEXT) simultaneously for at least 2 seconds until the area name and number appear in the viewfinder.

DATE now functions as + (to advance numbers) and TIME functions as NEXT (to set).


DATE(+)
TIME(NEXT)
In the viewfinder
17
US.PST
JAN.1 1992

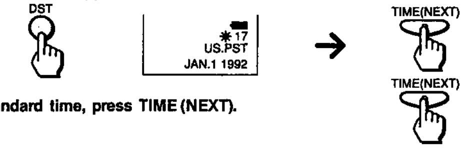
**4** Press DATE (+) to select your area name.

The time zones and area names are numbered as follows:

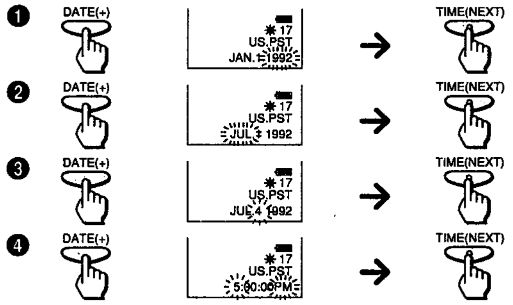
| Time Zone | Area Name | Area Number |
|---|---|---|
| Hawaii Standard Time | HAWAII | 15 |
| Alaska Standard Time | ANCHRGE | 16 |
| Pacific Standard Time/West Canada | US. PST | 17 |
| Mountain Standard Time | US. MST | 18 |
| Central Standard Time | US. CST | 19 |
| Eastern Standard Time/East Canada | US. EST | 20 |

**5** Choose one of the following options to set the clock:
(a) For Daylight Savings Time, press DST. Then press TIME (NEXT).
The ☀ indicator appears in the viewfinder.

(b) For standard time, press TIME (NEXT).

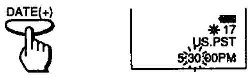

DST
✱17
US.PST
JAN.1 1992
TIME(NEXT)
TIME(NEXT)

**6** Adjust the flashing digits of the year, month, day and hour by pressing DATE (+) and TIME (NEXT).


❶
DATE(+)
✱17
US.PST
JAN.1 1992
TIME(NEXT)
❷
DATE(+)
✱17
US.PST
JUL.1 1992
TIME(NEXT)
❸
DATE(+)
✱17
US.PST
JUL.4 1992
TIME(NEXT)
❹
DATE(+)
✱17
US.PST
5:00:00PM
TIME(NEXT)

**Note:**
When you keep DATE (+) depressed, the digits advance faster.

**7** Adjust the flashing digits of minute by pressing DATE (+).


DATE(+)
✱17
US.PST
5:30:00PM

**8** Press TIME (NEXT).
The clock starts working.

**To correct the date and time settings**
Press TIME (NEXT) repeatedly until the minute digits stop flashing. Then repeat steps 3 to 8.

**To check the preset date and time**
Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.

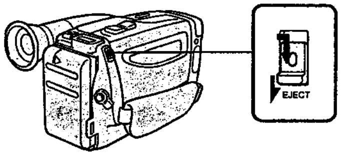
**To reset to standard time**
Press DST. The ☀ indicator goes off.

## Inserting a Cassette

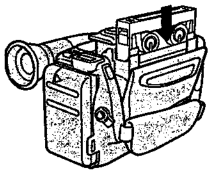
This section shows you how to insert a cassette.
Make sure that the power source is attached before you insert a cassette.

**1** **While pressing the small blue button on the EJECT knob, slide it down.**

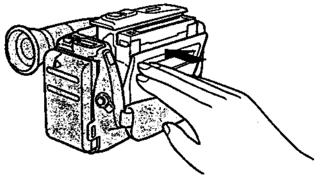
The cassette compartment automatically lifts up and opens toward you.



**2** **Insert a tape with the window facing out.**

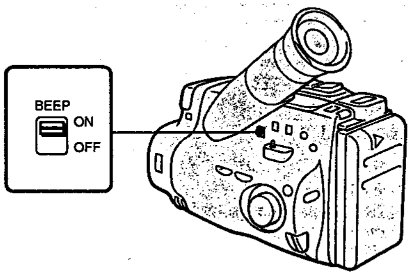


**3** **Close the cassette holder by pressing the "PUSH" mark on the cassette holder.**



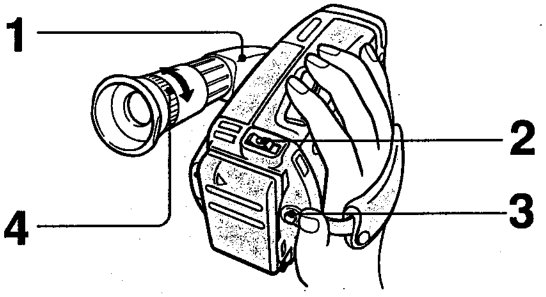
## Checking the BEEP Switch

A beep sounds when you start recording and two beeps sound when you stop recording, confirming the operation.
Several beeps also sound as a warning of any unusual condition of the camcorder. Note that the beep sound is not recorded on the tape.
If you do not want to hear the beep sound, set the BEEP switch to OFF.

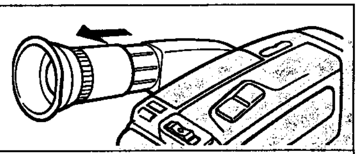


## Adjusting the Viewfinder Lens

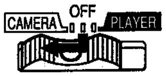
Before you use the camcorder for the first time (or after someone else has used it), adjust the viewfinder lens to best fit your eyesight. Make sure that the power source is attached to the camcorder, and a cassette is inserted.



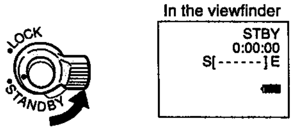
**1** **Pull out the viewfinder until it clicks.**



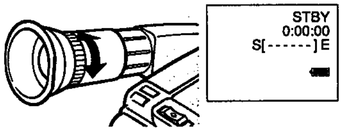
**2** **While pressing the small green button on the POWER switch, slide it to CAMERA.**



**3** **Turn the STANDBY switch up.**

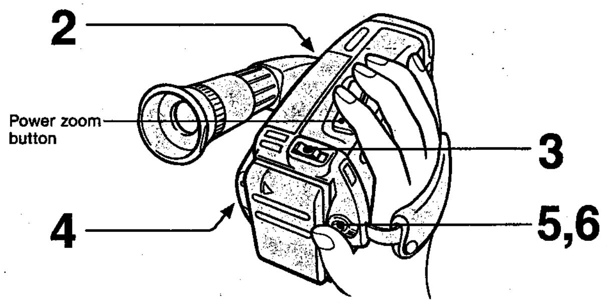


**4** **Turn the viewfinder lens adjustment ring so that the "STBY" indicator in the viewfinder screen comes into sharp focus.**



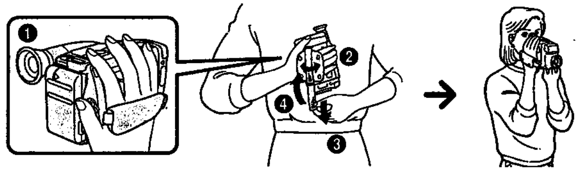
# Camera Recording

This section describes the basic procedures for recording.
Make sure that the viewfinder is pulled out and a battery pack (see page 9) or other power sources (see page 24) are attached. If you set the date (page 10), the date is automatically recorded for 10 seconds after you start recording (Auto Date feature). This feature works only once a day.
If you set the BEEP switch to ON, beeps sound when you start/stop recording or when you make a mistake in operation.
Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working perfectly.



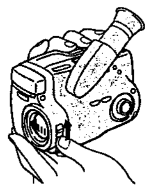
**1** **Hold the camcorder as described below.**

Put your hand through the grip strap, hold your camcorder against your body and pull the strap upward. Check that your thumb can easily touch START/STOP.

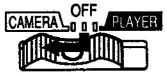


**2** **Slide the LENS COVER switch to OPEN.**

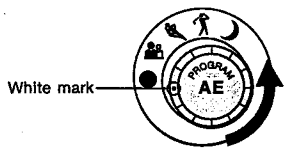
Note that the camcorder doesn't start recording while the lens cover is closed.



**3** **While pressing the small green button on the POWER switch, slide it to CAMERA.**

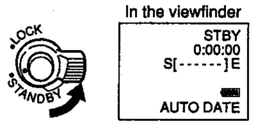


**4** **Set the white mark of the PROGRAM AE dial to the green position.**



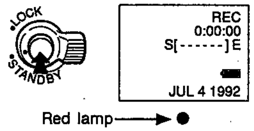
**5** **Turn the STANDBY switch up.**

"STBY", the remaining tape length and remaining battery indicators appear in the viewfinder. Now you can see through the viewfinder.



**6** **Press START/STOP once.**

The camcorder is recording when the "REC" indicator appears and the red lamp lights up in the viewfinder.



In the viewfinder, you can see a black and white picture of what you are recording and information that indicates what the camcorder is doing.

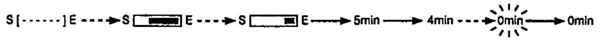
**To stop recording momentarily**
Press START/STOP again.
"STBY" indicator appears in the viewfinder.

**To finish recording**
Turn STANDBY down and slide the POWER switch to OFF. Close the lens cover.

**Ejecting the tape**
1 While pressing the small blue button on the EJECT knob, slide the knob down.
2 Take out the tape.
3 Close the cassette holder by pressing the "PUSH" mark on the cassette holder.

**To reset the counter to 0:00:00**
Press COUNTER RESET.

**To check the remaining tape length during recording**
In recording mode, the remaining tape length indicator appears in the viewfinder. The remaining tape length indicator changes as follows.



**When you shoot a subject within 80 cm (31 1/2 inches) of the lens using telephoto zoom**
If you cannot get a sharp focus while in extreme telephoto zoom, press the W side of the power zoom button until the focus becomes sharp.

**Note on the auto date feature**
The auto date feature works once a day. However, the date may automatically appear more than once a day when:
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.

## Camera Recording

**Near the end of the tape**

The ▭ indicator, the red lamp in the viewfinder, and the camera recording/battery lamp on the camcorder flash slowly. When the tape reaches the end, the flashing becomes rapid.

**Caution!**

Please remember that you can only use 8 mm format video cassettes with this camcorder, and that it is not possible to use PCM recording/playback function available on some 8 mm recorders. The PCM sound recorded or after-recoded with another recorder cannot be played back with this camcorder.

You can record tapes in SP (standard play) mode only, and play back tapes in both SP and LP (long play) modes.

**If you wear glasses**

You can bend back the eyecup to get a better view of the viewfider.

**Notes on recording**

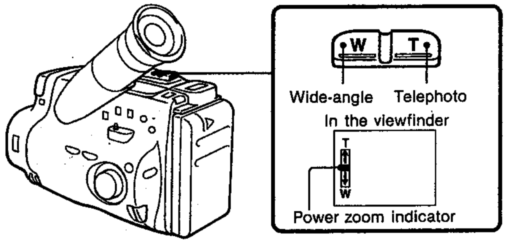
- When you record from the beginning of the tape, run the tape for about 15 seconds before the actual recording. This will ensure that you won't miss any start up scenes when the tape is played back.
- When moving from indoors to outdoors, or vice versa, turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

**If you leave the camcorder in standby mode for 5 minutes or more**

The camcorder goes off automatically. To re-enter standby mode, turn the STANDBY switch down once and turn it up again. To start recording, press START/STOP directly.

# Using the Zooming Feature

Zooming is a recording technique that lets you change the size of the subject in the scene. Use "Zoom-in (telephoto)" for dramatic close-ups, and "zoom-out (wide-angle)" for panoramic long shots. You can also use zooming to focus manually or to decide on a shooting angle. For more professional-looking recordings, use zooming sparingly.



## Dual Speed Zooming

The camcorder's power zoom button offers dual speed zooming. Press it firmly for high speed zooming and softly for relatively slow zooming.

Press the T side of the power zoom button for telephoto (subject appears closer) and the W side for wide-angle (subject appears farther away).

## Close-up (Macro)

Even small subjects such as flowers, insects, and images in photographs, can literally fill the screen using autofocus in macro.

1 **Bring the camcorder as close as necessary to obtain the desired subject size.**
2 **Press the W side of the power zoom button until the indicator in the viewfinder stops at the W end.**

**Manual focusing in Macro**

You can also shoot with manual focus while doing close-up.

For details of manual focusing, see page 31.

**Note**

You can shoot a subject that is at least 80 cm (about 31 1/2 inches) away from the lens surface in the telephoto position.

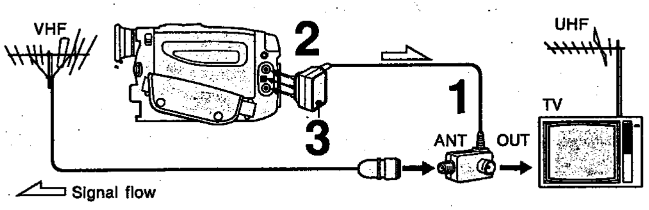
# Playing Back a Tape

You can use this camcorder to function as a VCR by connecting it directly to your TV for playback.

There are several ways to connect the camcorder to your TV. First check if your TV has video/audio inputs. If it does, see page 35. You can also monitor the playback picture in the viewfinder while the camcorder is connected to your TV.

## If Your TV Has Only an Antenna Input

Use the supplied RFU adaptor to connect your camcorder to the TV. Make sure that the TV is turned off to prevent speaker damage before hooking up to your camcorder.

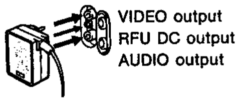


To connect your camcorder to a TV that already has a regular TV (VHF) antenna attached, you need to:

**1 Unplug the antenna cable from the TV.**

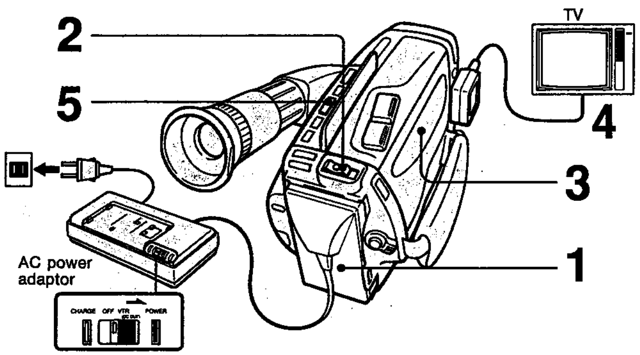
Plug in the end of the RFU adaptor marked OUT into the antenna input of your TV. Re-wire the antenna cable you unplugged to the RFU adaptor jack marked ANT. This way, you can switch between TV broadcasts and your home video playback without re-wiring.

**2 Connect the RFU adaptor to the camcorder.**



**3 Set the channel selector on the RFU adaptor (and your TV channel) to 3CH or 4CH of the VHF channel, whichever is not active (vacant) in your area.**

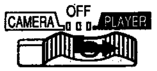
## Playing Back a Tape



**1 Attach the connecting plate of the AC power adaptor to the camcorder and connect the AC power adaptor to a wall outlet.**

Then set the selector to "VTR (DC OUT)" position.

**2 While pressing the small green button on the POWER switch, slide it to PLAYER.**



**3 Insert a tape.**

**4 Set the TV/VCR selector on the TV to VCR.**

**5 Press ▷ (PLAY).**
Playback starts.

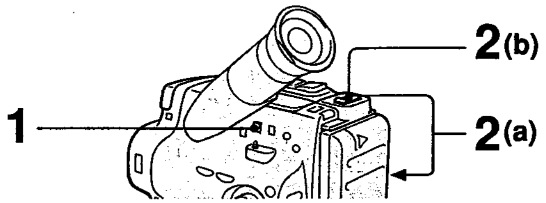
To stop playback, press ☐ (STOP).
To rewind the tape, press ◀◀ (REW).
To fast forward the tape, press ▶▶ (FF).

**When you have finished playback**

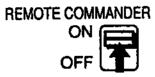
1 Slide the POWER switch to OFF.
2 Disconnect the AC power adaptor from the wall outlet.

# Using the Remote Commander

You can use the Remote Commander to record yourself with your friends or family, or conveniently control the playback of your tape from a distance. Before you use the Remote Commander, insert a supplied lithium battery into it (see page 7) and turn on the POWER switch on the camcorder.



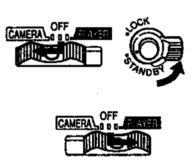
**1** **Set the REMOTE COMMANDER ON/OFF switch on the camcorder to ON.**



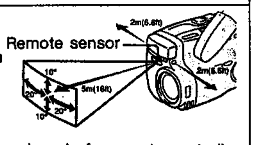
**2** **Set the POWER switch on the camcorder as follows:**

(a) When recording, 1) while pressing the small green button on the POWER switch, slide it to CAMERA, 2) turn STANDBY up.

(b) When playing back, while pressing the small green button on the POWER switch, slide it to PLAYER.



**3** **Aim the Remote Commander at the remote sensor on the camcorder and press the appropriate button on the Remote Commander.**



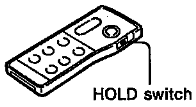
(Maximum distance and angle for remote control)

**Note**

The buttons that have the same name on the Remote Commander and on the camcorder function equally.

**To prevent misoperation**

When you slide the HOLD switch in the direction of the arrow, none of the buttons on the Remote Commander will work. Use this to prevent any misoperation, such as accidentally pressing a button.

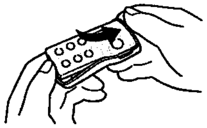


**Notes on the Remote Commander operation**

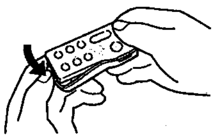
- Make sure that the remote sensor is not in sunlight or strong light. In that case, you may not be able to operate with the Remote Commander.
- This camcorder works through the signals of the commander mode "VTR 2". A commander mode is used to distinguish this camcorder from other Sony VCRs to avoid misoperation. If you use another Sony VCR at commander mode "VTR2", we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.
- Be sure that there are no obstructions between the Remote Commander and the camcorder.

**Using the Remote Commander holder**

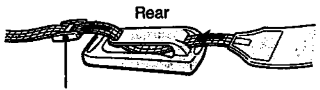
You can clip the Remote Commander holder on your coat pocket or belt, or slide it onto the shoulder belt before attaching the Remote Commander to it.



**To remove the Remote Commander from the holder**



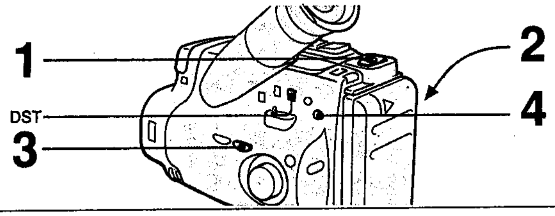
**To attach the holder to the shoulder belt**



Remove this part before sliding the holder onto the belt.

## Using the World Clock

You can reset the clock according to your time zone only by pressing the AREA button. Before using the world clock, set the date and time (see page 10).

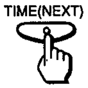


CAMERA
OFF
PLAYER

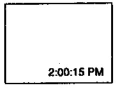
**1** **While pressing the small green button on the POWER switch, slide it to CAMERA.**

LOCK
STANDBY

**2** **Turn STANDBY up.**

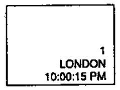


In the viewfinder



**3** **Press TIME (NEXT).**

The "date and time settings" appear.


1
LONDON
10:00:15 PM

**4** **Press AREA until your time zone's name and number appear.**

An area name appears in the viewfinder. You can find the area name and the number in the "Time zone chart" on the next page.

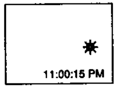
**To check the date**

Press DATE (+).
To turn off the date indicator, press DATE (+) again.

**To adjust to daylight savings time**

Press DST.
The time changes to daylight savings time.
To reset to standard time, press DST again.

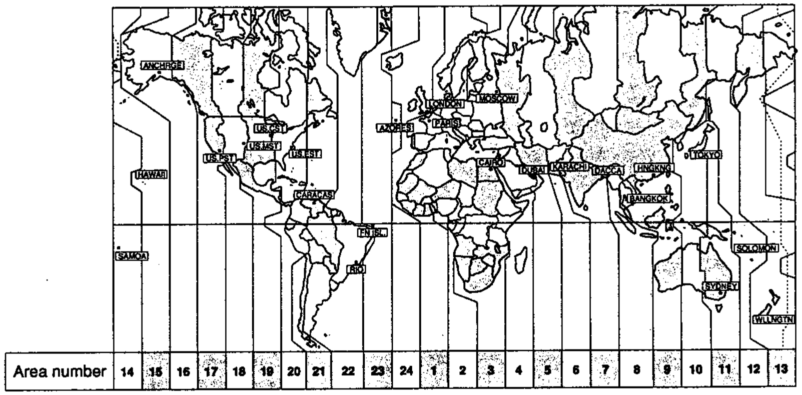
In the viewfinder



**To re-set to your home area time again**

Press AREA until your home area name appears.

**Time zone chart**


ANCHRGE
HAWAII
SAMOA
US.PST
US.MST
US.CST
US.EST
CARACAS
RIO
FN ISL.
AZORES
LONDON
PARIS
MOSCOW
CAIRO
DUBAI
KARACHI
DACCA
HNGKNG
BANGKOK
TOKYO
SOLOMON
SYDNEY
WLLNGTN
Area number
14 15 16 17 18 19 20 21 22 23 24 1 2 3 4 5 6 7 8 9 10 11 12 13

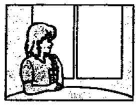
| Area number | Area name | Nations or area* |
|---|---|---|
| 1 | LONDON | England, GMT (Greenwich Mean Time), Portugal |
| 2 | PARIS | Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland |
| 3 | CAIRO | Egypt, Greece, Israel, Turkey |
| 4 | MOSCOW | Iraq, Kenya, Saudi Arabia, former Soviet Union (west) |
| 5 | DUBAI | United Arab Emirates |
| 6 | KARACHI | Moldives, Pakistan |
| 7 | DACCA | Bangladesh, India, Myanmar |
| 8 | BANGKOK | Cambodia, Indonesia (Jakarta), Thailand, Vietnam |
| 9 | HNGKNG | Australia (west), China, Hong Kong, Indonesia (Bali, Borneo), Malaysia, Philippines, Singapore, Taiwan |
| 10 | TOKYO | Japan, Korea |
| 11 | SYDNEY | Australia (east), Guam, Saipan |
| 12 | SOLOMON | New Caledonia |
| 13 | WLLNGTN | Fiji, New Zealand |
| 14 | SAMOA | Western Samoa |
| 15 | HAWAII | HST (Hawaii standard time), Tahiti |
| 16 | ANCHRGE | AST (Alaska standard time) |
| 17 | US. PST | PST (Pacific standard time) |
| 18 | US. MST | MST (Mountain standard time) |
| 19 | US. CST | CST (Central standard time), Mexico |
| 20 | US. EST | EST (East standard time), Peru |
| 21 | CARACAS | Chile, Venezuela |
| 22 | RIO | Argentina, Brazil |
| 23 | FN ISL. | Fernando de Noronha |
| 24 | AZORES | Azores Islands |

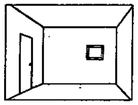
* These are common names. They may be different from formal country names.

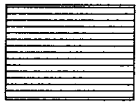
# Focusing Manually

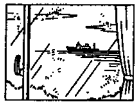
**When to use manual focus**

In the following cases you should obtain better results by adjusting the focus manually.


[a]


[b]


[c]

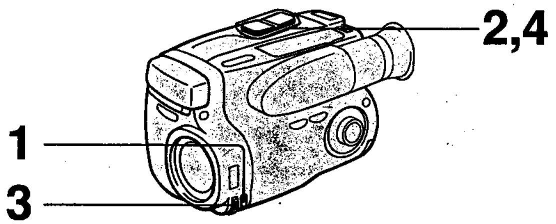

[d]

**[a]** to **[d]** correspond to the illustrations above.

- Too much brightness behind the subject **[a]**
- Subjects with little contrast – walls, sky, etc. **[b]**
- Horizontal stripes **[c]**
- Subject through frosted glass **[d]**
- Insufficient light
- One subject is close; the other is in the center, but at a distance
- Subjects beyond nets, etc., or another subject passes in front of the camcorder
- Bright subject or subject reflecting light
- High contrast behind the subject (the background may be focused)
- When using conversion lenses or effect filters
- When shooting a stationary subject using tripod
- When you want to save battery power

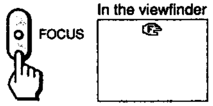
## Focusing Manually

When adjusting the focus manually, the best way is to first adjust at telephoto position before recording, then set the desired zoom angle.

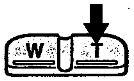


**1** **Press FOCUS.**

The F (manual focusing) indicator appears in the viewfinder.

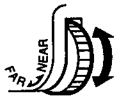


**2** **Keep pressing the T (telephoto) side of the power zoom button until the zooming stops.**



**3** **Turn the focus dial to achieve sharp focus.**

The focus dial does not have a stop position.



**4** **Set the desired shot length using the power zoom button.**

**To reactivate autofocusing**

Press FOCUS until the F indicator in the viewfinder disappears.

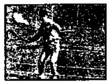
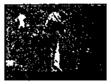
**Shooting in relatively dark places**

When shooting in relatively dark places such as indoors, the depth of field (distance range of the subject that will be in sharp focus) is very shallow. For best results, shoot at wide angle after focusing in the telephoto position.

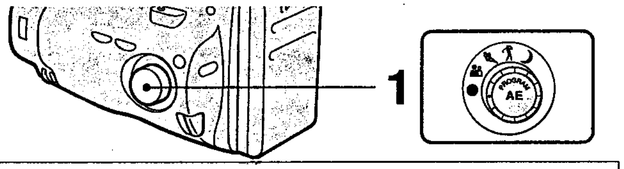
## Using the PROGRAM AE Function

When you use the PROGRAM AE (Auto Exposure) function, you can give a "portrait" effect (the object is in focus and the background is out of focus), or capture high-speed action with "sports" mode or "high speed shutter" mode. When you record fireworks or neon signs, use "twilight" mode. Select from four types of mode referring to the following table.

**To choose the best programmed AE mode**

| When shooting: | Select: | In the viewfinder |
|---|---|---|
| • A still subject such as a person or a flower<br>• Zooming in a subject in the telephoto mode<br>• A subject behind such obstacle as a net | (Portrait mode) | |
| • Outdoor sports scene such as football, tennis or golf<br>• A landscape in a moving car | (Sports mode) |  |
| • A golf swing or a tennis match with the tennis ball captured clearly<br>• Playing back certain scenes with high speed movements in a clear, sharp picture | (High speed shutter mode) |  |
| • Recording a night view, neon signs, or fireworks | (Twilight mode) | |

### Selecting the PROGRAM AE Mode



**1 Set the white mark of the PROGRAM AE dial to the desired PROGRAM AE mode.**
The indicator of the selected PROGRAM AE mode appears in the viewfinder.
As you turn the dial, the indicator changes as follows:

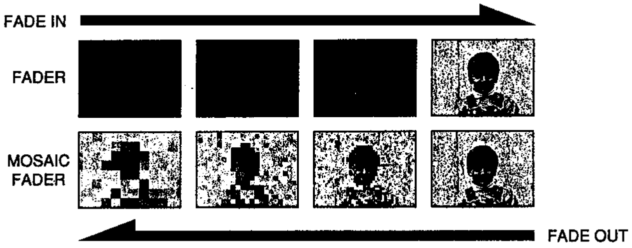
No indicator → (Portrait mode) → (Sports mode) → (High-speed shutter mode) → (Twilight mode)
↑_______________________________________________|

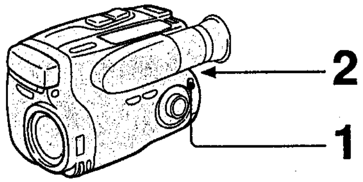
**Note**

The shutter speed in each RPOGRAM AE mode is as follows:
Portrait mode – between 1/60 to 1/2000
Sports mode – between 1/60 to 1/500
High-speed shutter mode – 1/4000
Twilight mode – 1/60

## Fade-in and Fade-out

You can fade a picture in or out with sound to give your recording a professional touch. When fading-in, you can make the picture gradually appear from black or mosaic while increasing the sound. When fading-out, you can make the picture gradually fade to black or mosaic while decreasing the sound.



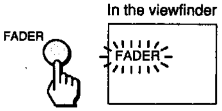


**1 Select the type of fade by pressing FADER as follows:**

(a) When fading-in, press it after turning the STANDBY switch up to put the camcorder into standby mode. The fade indicator starts flashing.
(b) When fading-out, press it while recording.
The fade indicator starts flashing.

**Note on the FADER button**
Each time you press FADER,
the indicator changes as follows:

No indicator → FADER (black fade)
↑ ↓
M. FADER (mosaic fade)



**2 Press START/STOP.**

When fading-in, the fade indicator stops flashing and the recording starts fading in.
When fading-out, the fade indicator stops flashing, the picture fades out, and then recording stops.

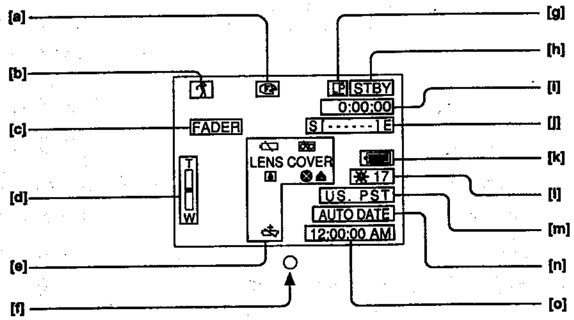
LOCK
STANDBY

**To cancel the fade-in/fade-out function**
Before pressing START/STOP, press FADER so that the fade indicator disappears.

# Indicators in the Viewfinder

## Operation Indicators

For details on each indicator, refer to the pages idicated in the parenthesis.

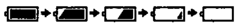
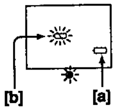
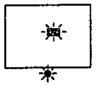
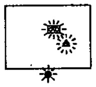
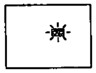
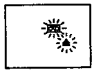
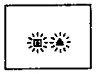
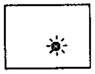
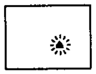
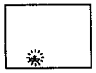
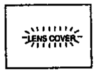


[a] Manual focusing (F) (32)
[b] PROGRAM AE indicator (33)
[c] FADER has been pressed. (34)
[d] Power zoom indicator (17)
[e] Warning indicators (51)
[f] Lights up during recording.
When flashing: "Change battery or cassette"

[g] Lights up when playing back a tape recorded in LP mode (40)
[h] Tape transport mode (15), (19), (37)
[i] Tape counter
[j] Remaining tape length indicator (15), (37)
[k] Remaining battery indicator (9), (51)
[l] Area number (10), (29)
[m] Area name (10), (29)
[n] Auto date (15)
[o] Date or Time (10), (26)

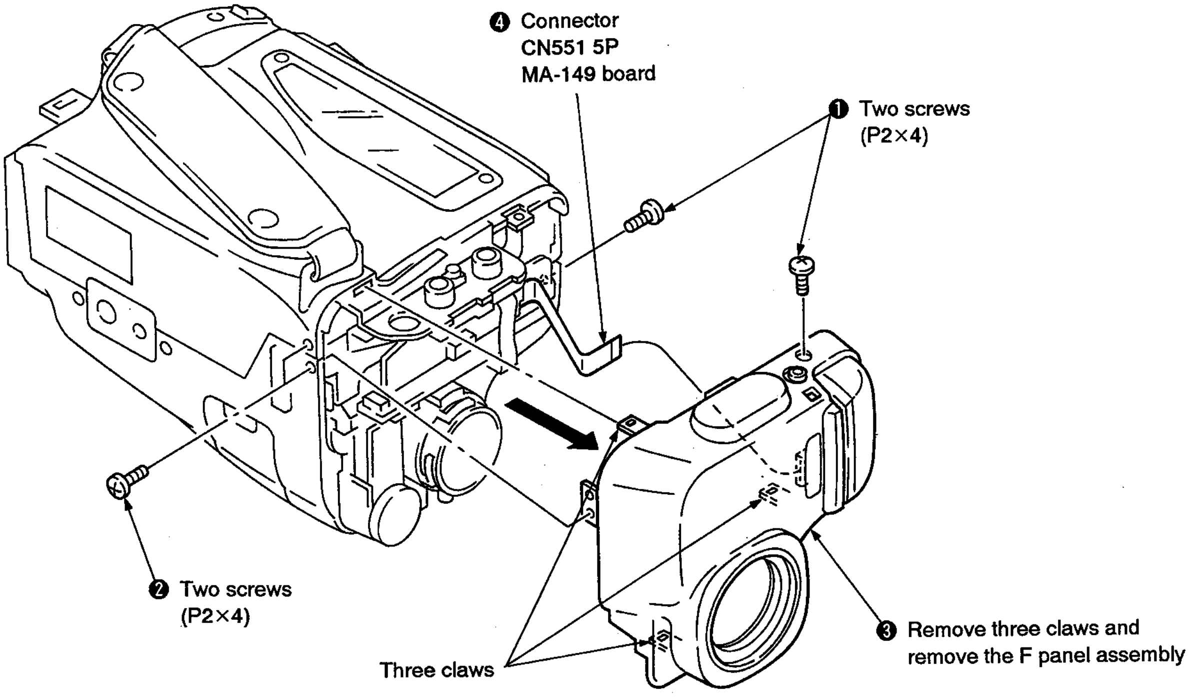
## Warning Indicators

If indicators flash in the viewfinder or a caution lamp on the camcorder flashes, check the following:

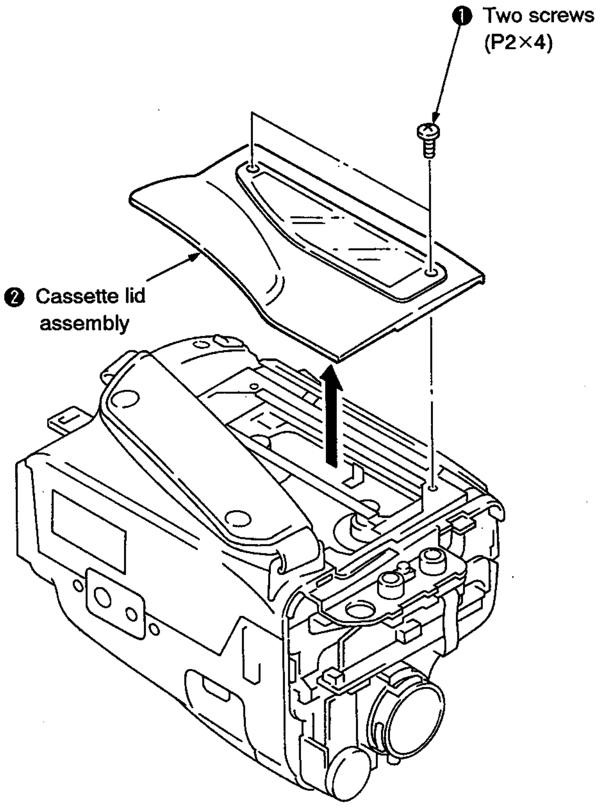
| | In the viewfinder |
|---|---|
| [a] Remaining battery indicator<br><br>[b] Battery lamp<br>Slow flashing: The battery is weak.<br>Fast flashing: The battery is dead. | <br>[b] [a] |
| The tape is near the end. |  |
| The tape has run out. |  |
| No tape has been inserted. |  |
| The tab on the tape is out (red). |  |
| Moisture condensation has occurred. |  |
| The video heads may be contaminated. |  |
| Some other trouble has occured.<br>Disconnect the power source and contact your Sony dealer or local authorized facility. |  |
| The lithium battery is weak. |  |
| The LENS COVER switch is set to CLOSE. |  |

# SECTION 2
# DISASSEMBLY

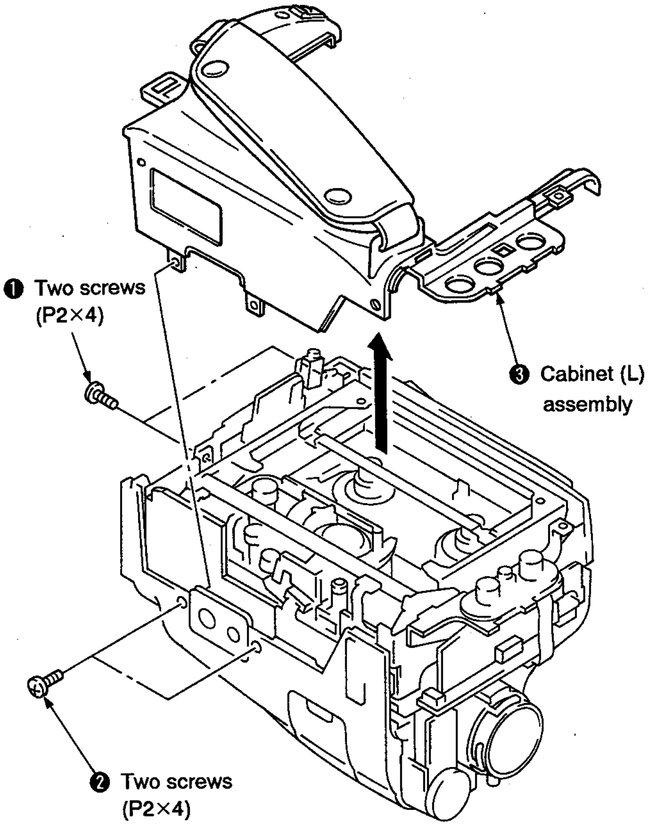
## 2-1. REMOVAL OF F PANEL ASSEMBLY


❹ Connector
CN551 5P
MA-149 board
❶ Two screws
(P2×4)
❷ Two screws
(P2×4)
Three claws
❸ Remove three claws and
remove the F panel assembly

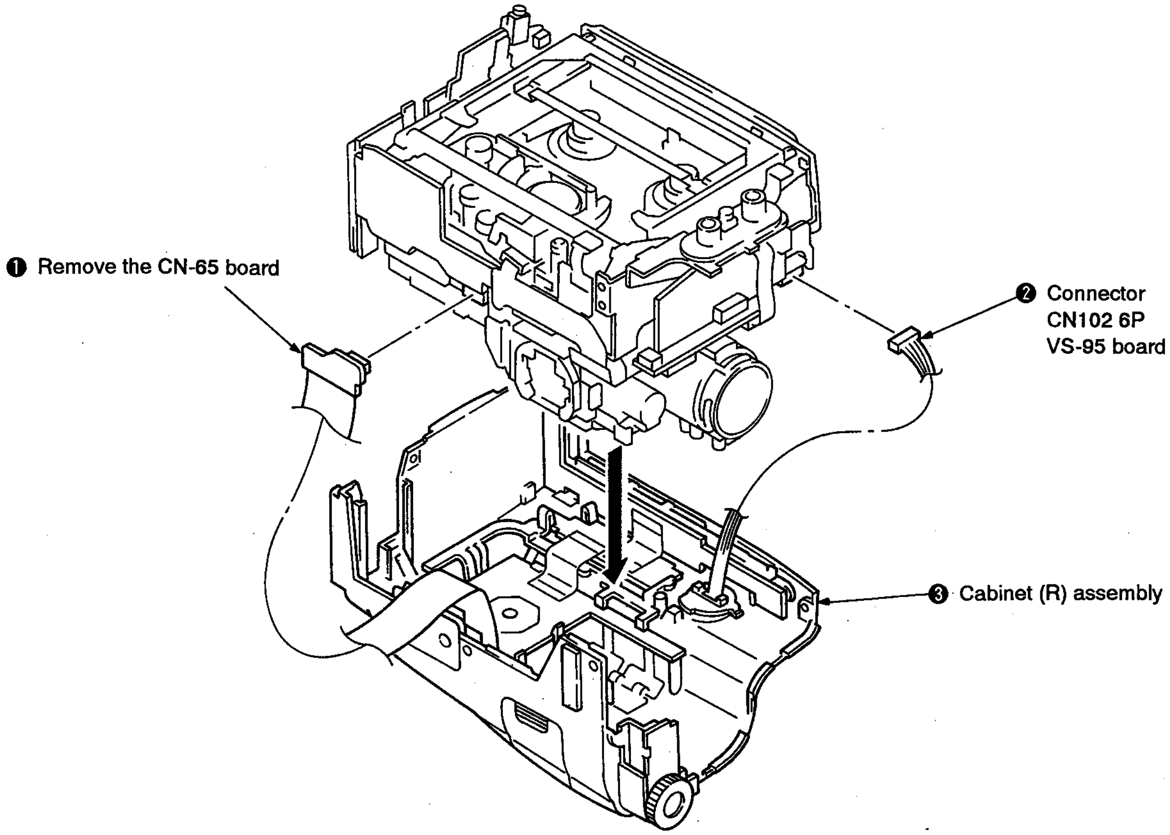
## 2-2. REMOVAL OF CASSETTE LID ASSEMBLY


❶ Two screws
(P2×4)
❷ Cassette lid
assembly

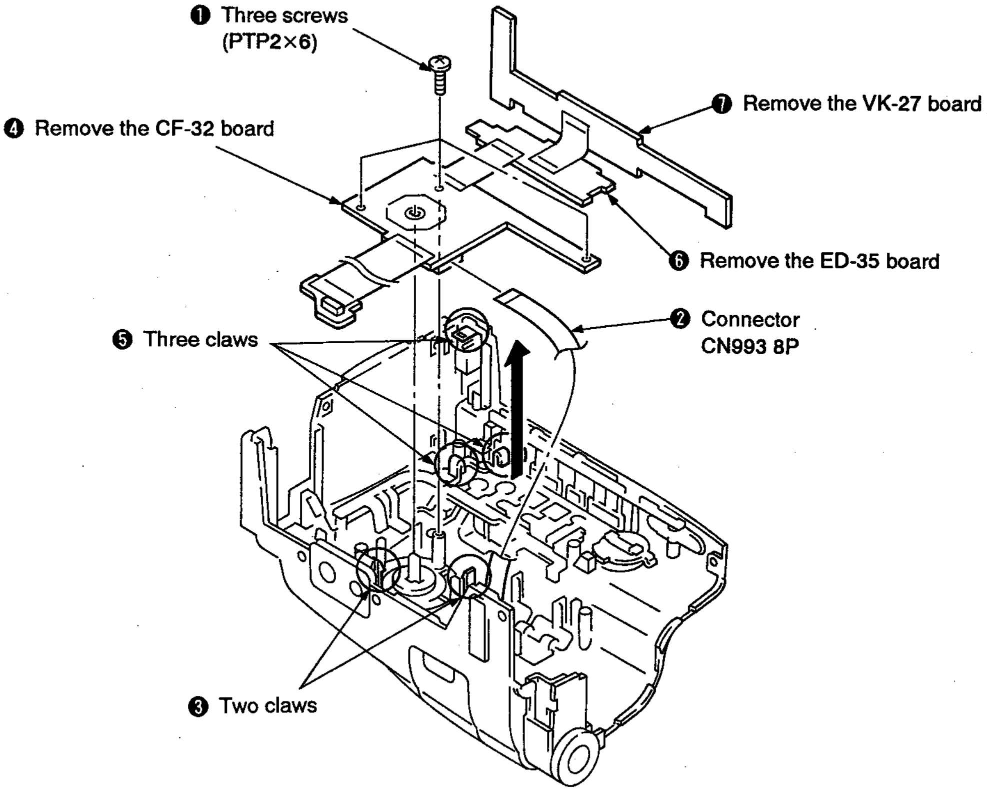
## 2-3. REMOVAL OF CABINET (L) ASSEMBLY


❶ Two screws
(P2×4)
❸ Cabinet (L)
assembly
❷ Two screws
(P2×4)

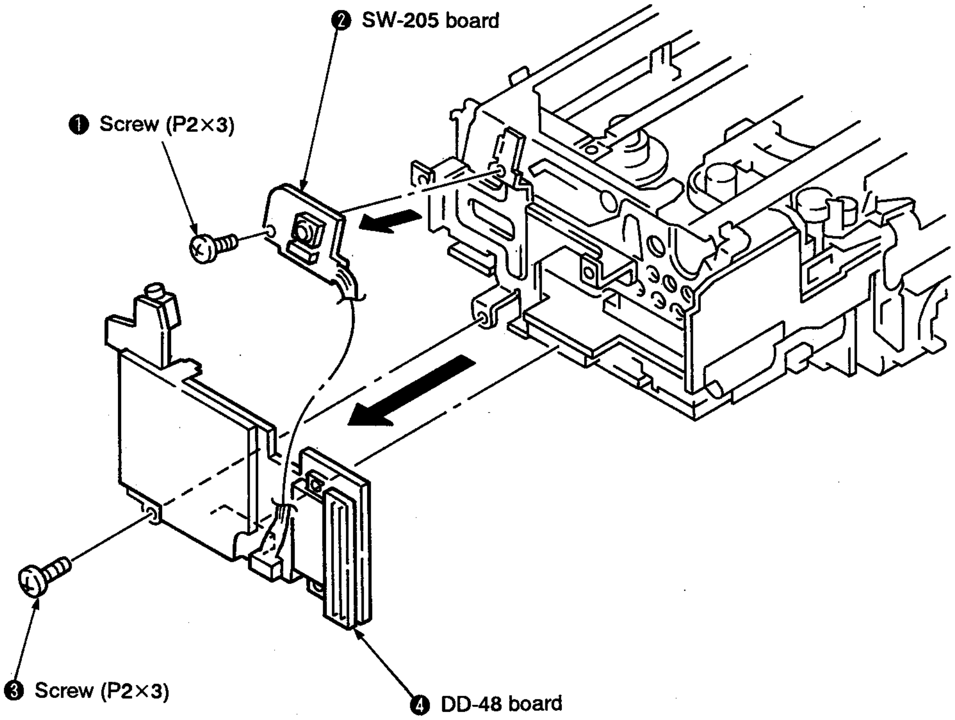
## 2-4. REMOVAL OF CABINET (R) ASSEMBLY


❶ Remove the CN-65 board
❷ Connector
CN102 6P
VS-95 board
❸ Cabinet (R) assembly

## 2-5. REMOVAL OF CF-32, ED-35 AND VK-27 BOARDS

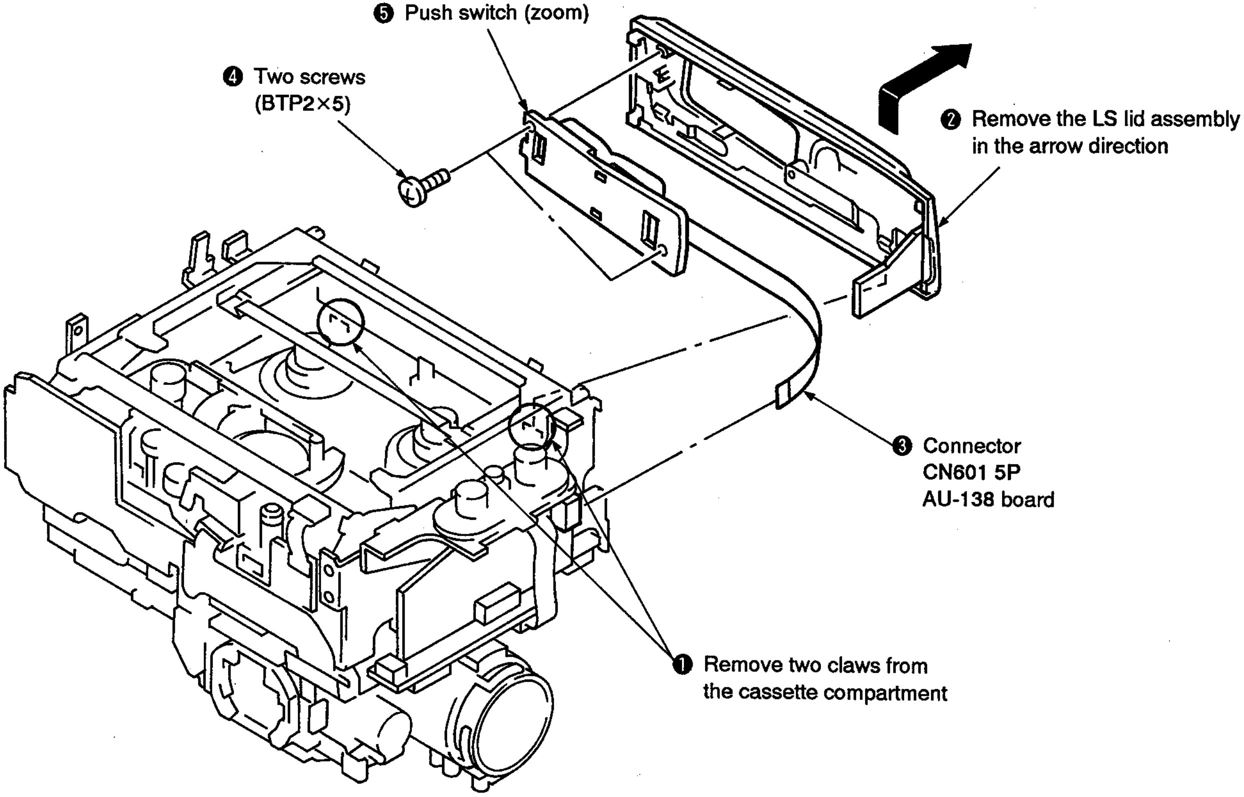

❶ Three screws
(PTP2×6)
❹ Remove the CF-32 board
❼ Remove the VK-27 board
❻ Remove the ED-35 board
❷ Connector
CN993 8P
❺ Three claws
❸ Two claws

## 2-6. REMOVAL OF DD-48 AND SW-205 BOARDS



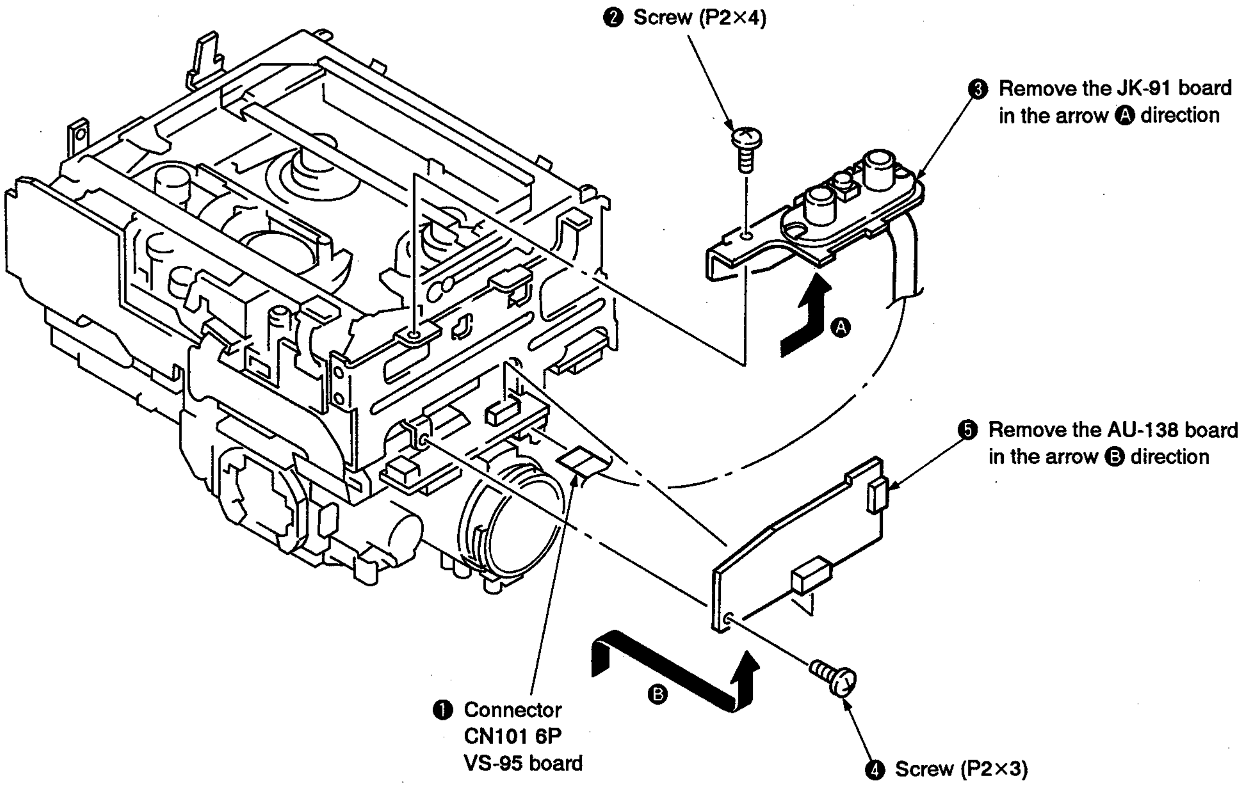
❷ SW-205 board
❶ Screw (P2×3)
❸ Screw (P2×3)
❹ DD-48 board

## 2-7. REMOVAL OF LS LID ASSEMBLY

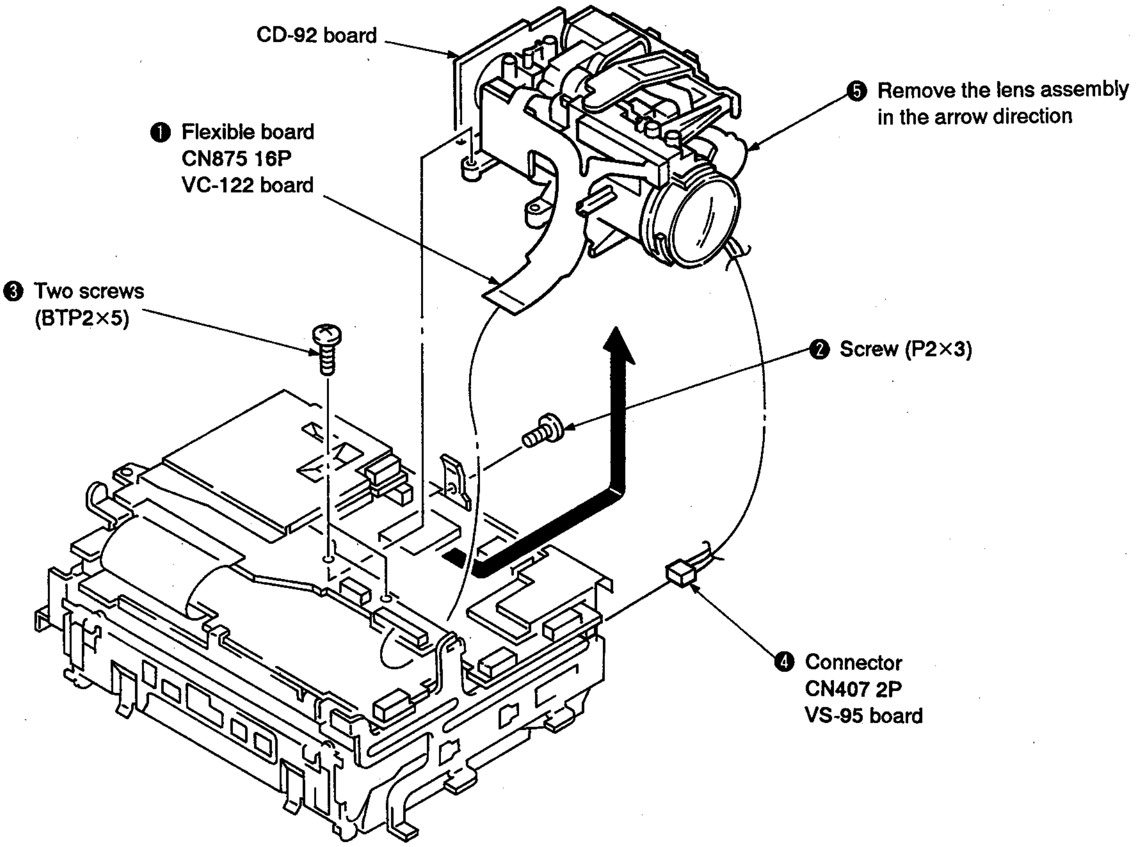


❺ Push switch (zoom)
❹ Two screws (BTP2×5)
❷ Remove the LS lid assembly in the arrow direction
❸ Connector CN601 5P AU-138 board
❶ Remove two claws from the cassette compartment

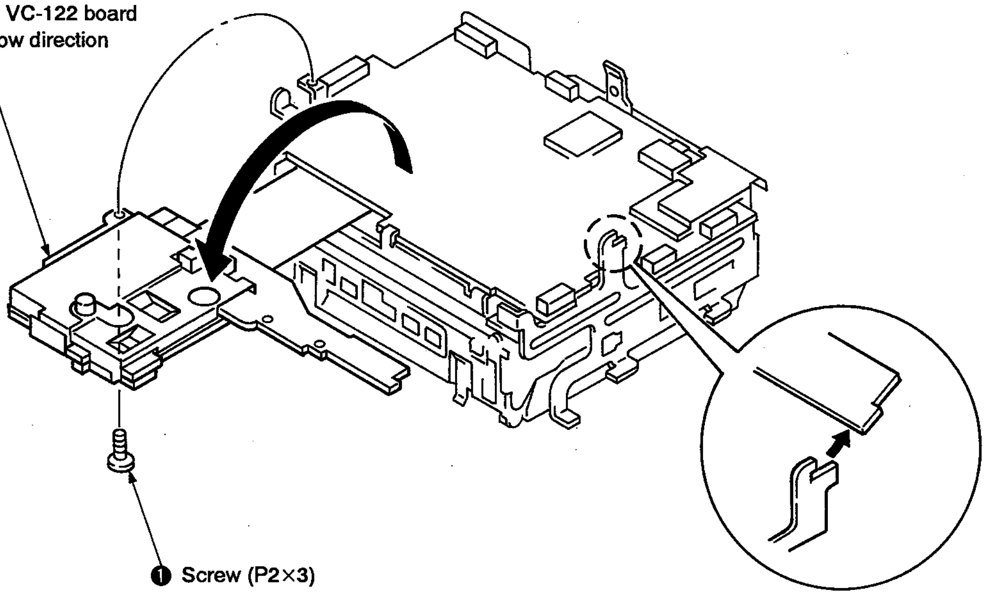
## 2-8. REMOVAL OF JK-91 AND AU-138 BOARDS


② Screw (P2×4)
③ Remove the JK-91 board in the arrow Ⓐ direction
Ⓐ
⑤ Remove the AU-138 board in the arrow Ⓑ direction
Ⓑ
① Connector CN101 6P VS-95 board
④ Screw (P2×3)

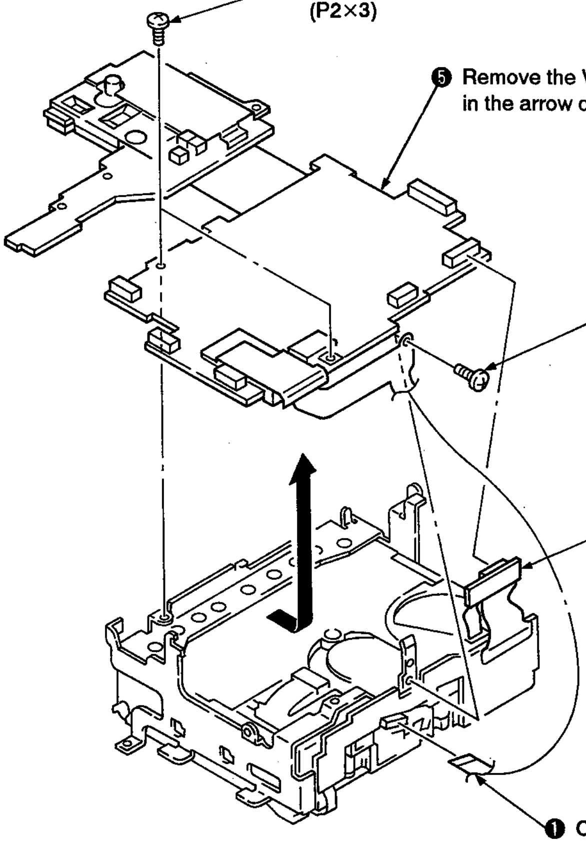
## 2-9. REMOVAL OF LENS ASSEMBLY (CD-92 BOARD)


CD-92 board
① Flexible board CN875 16P VC-122 board
⑤ Remove the lens assembly in the arrow direction
③ Two screws (BTP2×5)
② Screw (P2×3)
④ Connector CN407 2P VS-95 board

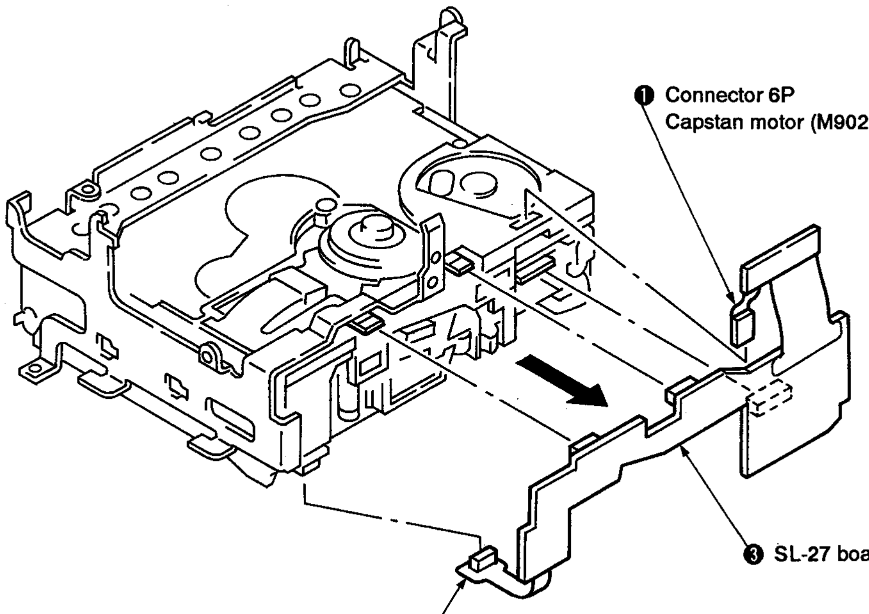
## 2-10. OPENING OF VC-122 BOARD


❸ Open the VC-122 board in the arrow direction
❶ Screw (P2×3)
❷ Remove the VC-122 board by removing claw of frame (Lower)

## 2-11. REMOVAL OF VS-95 BOARD


❹ Two screws (P2×3)
❺ Remove the VS-95 board in the arrow direction
❸ Screw (P2×3)
❷ Connector CN406 30P
❶ Connector 11P Drum motor (M901)

## 2-12. REMOVAL OF SL-27 BOARD

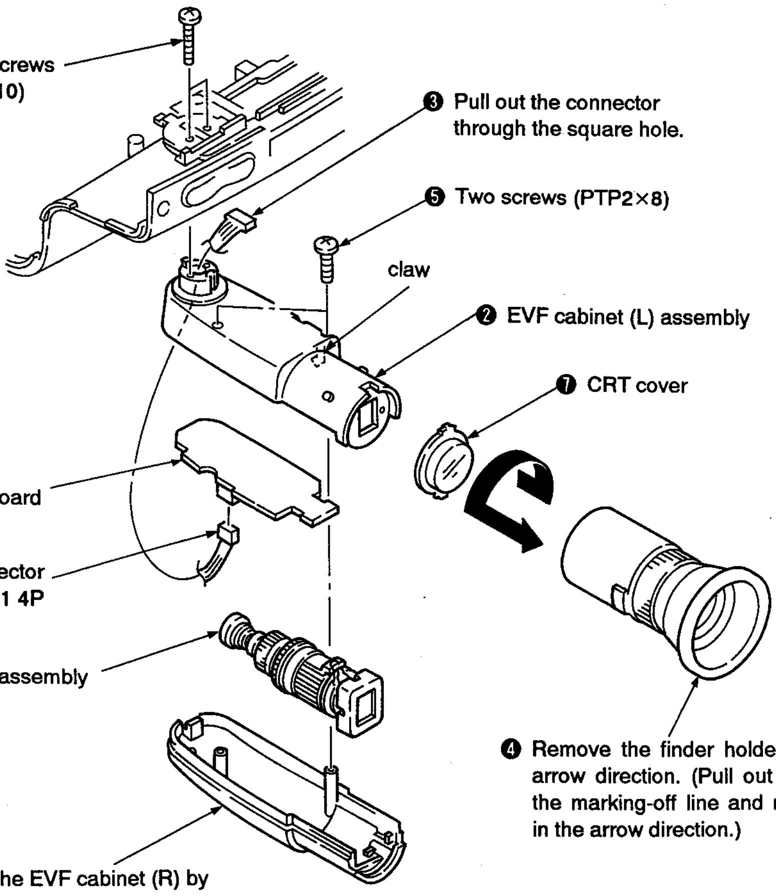


❶ Connector 6P
Capstan motor (M902)

❷ Connector 4P
Loading motor (M903)

❸ SL-27 board

## 2-13. REMOVAL OF EVF ASSEMBLY (VF-42 BOARD)



❶ Two screws
(P2×10)

❷ EVF cabinet (L) assembly

❸ Pull out the connector
through the square hole.

❹ Remove the finder holder assembly in the arrow direction. (Pull out to the position of the marking-off line and remove by turning in the arrow direction.)

❺ Two screws (PTP2×8)

❻ Remove the EVF cabinet (R) by
lifting up with the claw as its fulcrum

❼ CRT cover

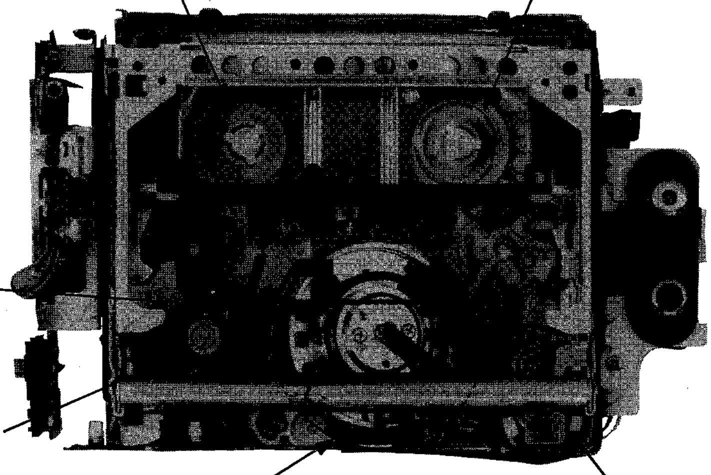
❽ CRT assembly

❾ Remove a claw and
remove the VF-42 board

❿ Connector
CN501 4P

## 2-14. INTERNAL VIEWS

### — Left side —



T reel table assembly
X-3941-274-1

S reel table assembly
X-3941-275-1

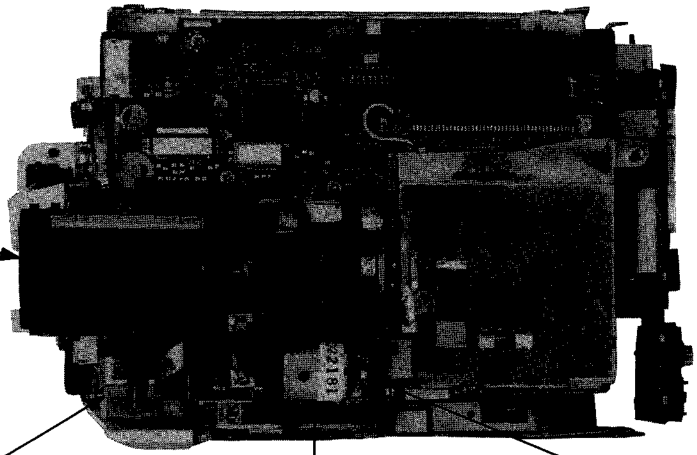
Pinch roller

M902
Capstan motor (SCE-0101A)
8-835-477-01

M901
Drum assembly (DGH-78A-R)
A-7048-564-A
Upper drum assembly (DGR-78-R)
A-7049-501-A

M903
Loading motor assembly
A-7040-304-A

### — Right side —



Zoom lens (VCL-6210WC)
1-547-548-11

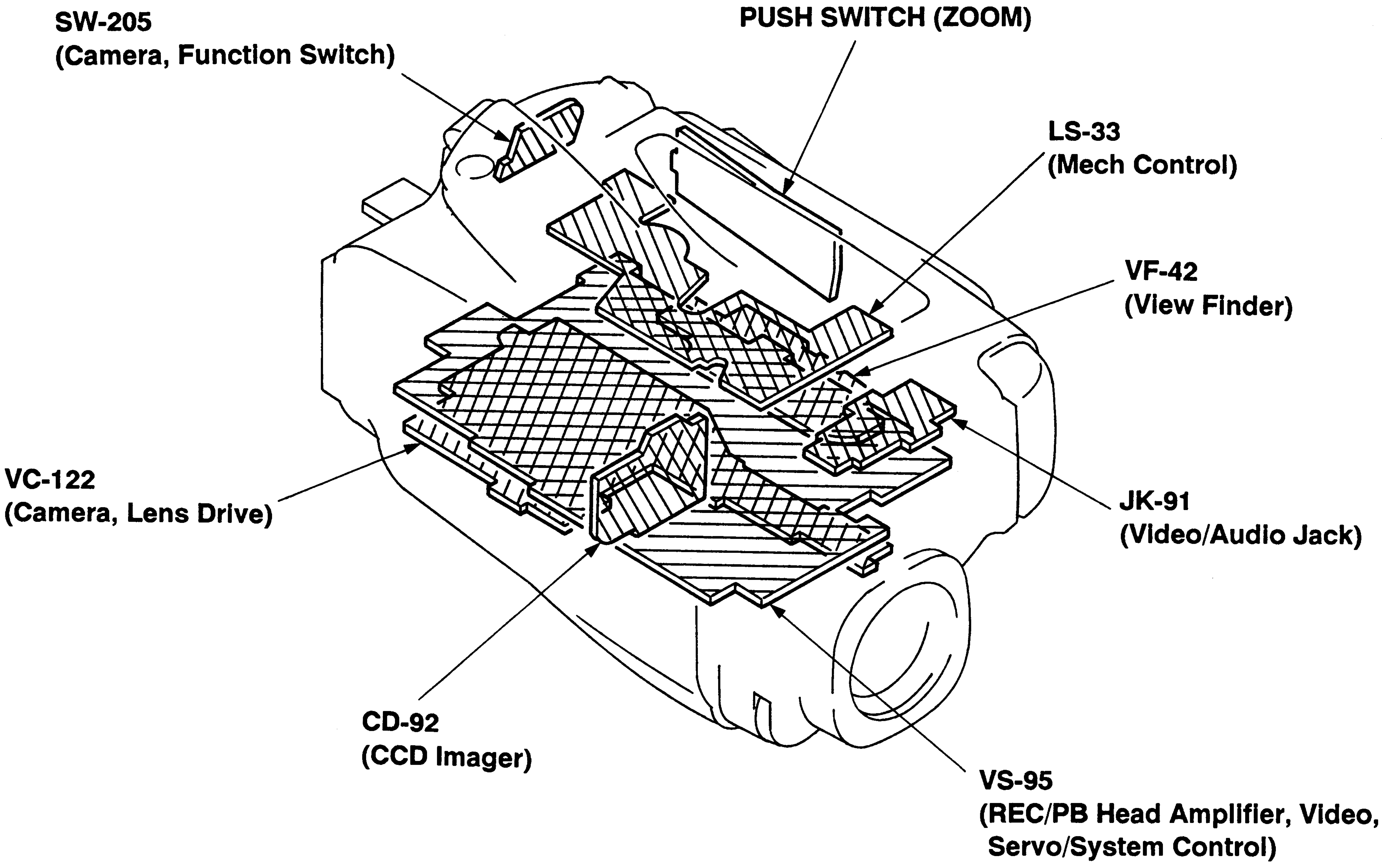
M904
IRIS meter assembly
3-708-494-01

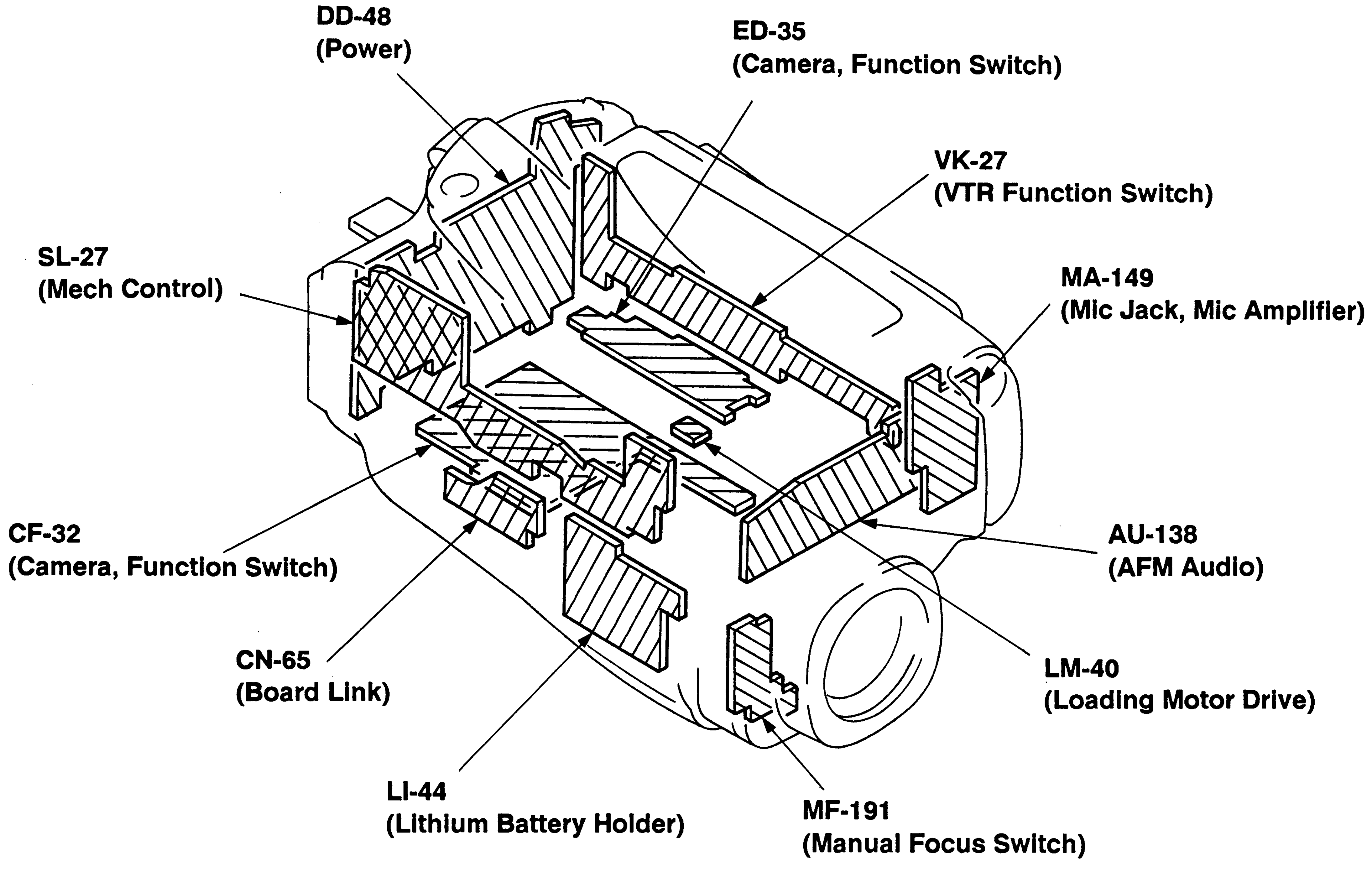
M906
Zoom motor assembly
3-708-492-01

M905
Focus motor assembly
3-708-491-01

# SECTION 3
# DIAGRAMS

## 3-1. CIRCUIT BOARDS LOCATION


SW-205
(Camera, Function Switch)
PUSH SWITCH (ZOOM)
LS-33
(Mech Control)
VF-42
(View Finder)
VC-122
(Camera, Lens Drive)
JK-91
(Video/Audio Jack)
CD-92
(CCD Imager)
VS-95
(REC/PB Head Amplifier, Video,
Servo/System Control)


DD-48
(Power)
ED-35
(Camera, Function Switch)
VK-27
(VTR Function Switch)
SL-27
(Mech Control)
MA-149
(Mic Jack, Mic Amplifier)
CF-32
(Camera, Function Switch)
AU-138
(AFM Audio)
CN-65
(Board Link)
LM-40
(Loading Motor Drive)
LI-44
(Lithium Battery Holder)
MF-191
(Manual Focus Switch)

## 3-2. OVERALL BLOCK DIAGRAM

(See Page 116)
MF-191 BOARD
S971, 973
LENS CLOSE, FOCUS SWITCH
S972
MANUAL FOCUS
KEY IN 4, 6
KEY OUT 0, 4
FOCUS 1 . 2
ZOOM LENS
M904 IRIS METER
(See Page 79)
CD-92 BOARD
IC875
CCD IMAGER
CCD OUT
M905 (1/2) FOCUS MOTOR
ZOOM POSITION
HALL
M905 (1/2) ZOOM MOTOR
VC-122 BOARD
(See Page 85, 88, 92)
IC805
SIGNAL SEPARATION AGC
GY OUT
IC802,
IC803
A/D CONV
D0-D9
10
IC707
CAMERA CORE
(DIGITAL CAMERA PROCESS)
CAM Y
CAM C
IC804
V DRIVE
IC801
TIMING GENERATOR
V1-V4, V SUB
H1, H2, PG
IC702
ADJUST VOLTAGE
EVR
CAM SO, CAM SI, CAM SCK
IC705
OPD
IC704
SYNC GENERATOR
IC706
FOCUS PRE DRIVE
FOCUS 1 . 2
IC709
CAMERA CONTROL
FOCUS M A, B, Ā, B̄
ZOOM ENC
HALL (+)
DRIVE (+)
ZOOM M. T
IC851
IC852
IRIS DRIVE
HALL AMP
IC854
ZOOM MOTOR DRIVE
ZOOM FWD, REV
IRIS PWM
HALL OUT
IC856
ZOOM POSITION AMP
ZOOM POS, ZOOM POSX4
IC853
FOCUS MOTOR DRIVE
FOC IN 1, 2, 3, 4
VTR SO . VTR SI . VTR SCK
ZOOM SW
VS-95 BOARD (See Page 100, 104, 107)
DATA TO MSTR, DATA TO SLV, SCK
IC406
CHARACTER GENERATOR
IC405
EEP ROM
IC402
MECHA CONTROL / SERVO
MECHA CONTROL
SERVO
IC410
LOADING MOTOR DRIVE
LOAD . UN LOAD
M903 LOADING MOTOR
FP-442 BOARD
S001 MODE SWITCH
MSW A-C
S005 CC DOWN
CC DOWN
DEW SENSOR
DEW SENS
DEW
D001 TAPE LED
Q001 TAPE TOP SENSOR
TOP SENS
TAPE TOP DETECT
IC521
H001 T REEL FG SENSOR
H002 S REEL FG SENSOR
T REEL (+) . (-)
S REEL (+) . (-)
T REEL FG AMP
S REEL FG AMP
T REEL FG
S REEL FG
Q002 TAPE END SENSOR
END SENS
TAPE END DETECT
TAPE LED (K)
S002 ME/MP REC PROOF
ME/MP SW
REC PROOF SW
LS-33 BOARD (1/2) (See Page 118)
VIDEO . AUDIO . SERVO CONTROL SIG.
IC521 (1/2)
D PG . D FG
WAVE SHAPER
DRUM PG, DRUM FG
(See Page 119)
SL-27 BOARD
RF SWP
1/2 RF SWP
CLOG PB . SP/LP DET
IC408 (1/2)
DRUM ERROR
LPF
DRUM PWM
CAP ERROR
CAP PWM
CAP FG
REF PILOT
ATF ERROR
IC407
SIRCS
SIRCS CONTROL
IC403
LCD/MODE CONTROL
IC401
BACKUP Vdd SWITCH
BACKUP VDD
VTR UNREG
LI-3V
KEY IN 0 ~6
KEY OUT 0 ~5
IC409
LANC SO . LANC SI
LANC I/O
LANC DATA
(See Page 117)
VK-27 BOARD
S976~981, 983
KEY MATRIX (POWER SWITCH VTR FUNCTION SWITCH)
(See Page 116)
ED-35 BOARD
S986~990
KEY MATRIX (EDIT, REMOCON, DDS, BEEP SWITCH)
(See Page 115)
CF-32 BOARD
S991~996
KEY MATRIX (PROGRAM AE, CUNTER RESET TAPE RESET, FADER, DDS SWITCH)
SP991
BEEP ON
LI 3V
LITHIUM BATTERY
LI-44 BOARD
(See Page 117)
(See Page 137)
SW-205 BOARD
S519, 520
KEY MATRIX (STANDBY, START/STOP SWITCH)
DD-48 BOARD (1/2)
(See Page 137)
S901
KEY MATRIX (EJECT SWITCH)
J902
REMOTE
IC901 (1/3)
CAM DD ON
CAM 15V
CAM -9V
CAM 5V
D4V
D5V
MT 5V
EVF 5V
AU 5V
VID 5V
RP 5V
VTR DD ON
CAMERA DC/DC CONVERTER
VTR DC/DC CONVERTER
EVF UNREG
VTR UNREG
MAIN BATTERY
VF-42 BOARD
(See Page 131)
DY
H V
DH1 . DH2
T501
HV
H
H OUT
CRT
CRT DRIVE
G1
IC501
EVF VIDEO
JK-91 BOARD
(See Page 117)
J517
VIDEO OUT
RFU DC OUT
AUDIO OUT
5V
IC151
IC154 ~ IC156
CAM Y
VIDEO OUT
EVF OUT
Y PROCESS
IC152
CAM C
C PROCESS
Y RF
PB RF
PB C RF
REC C RF
IC156, IC158
ADJUST VOLTAGE
EVR
IC001, IC003
REC/PB AMP
CH1 B
CH1 A
RF SWP
FLYING ERASE
FLYING ERASE OSC
FE
M901 DRUM MOTOR
DRUM PG, FG
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM VS
DD-48 BOARD (1/2)
(See Page 137)
DRUM PWM DRIVE
IC901 (1/3)
IC901 (1/3)
CAPSTAN PWM DRIVE
CAP VS
M902 CAPSTAN MOTOR
CAPSTAN FG
CFG (+), (-)
IC001
CAPSTAN MOTOR DRIVE
WAVE SHAPER
(See Page 118)
LS-33 BOARD (1/2)
REC ATF
PB RF
IC404
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
(See Page 126)
MA-149 BOARD
IC551
MIC
MIC AMP
MIC SIG
AU-138 BOARD
(See Page 125)
IC601
AUDIO OUT
MIC SIG
AFM AUDIO PROCESS
REC AFM
PB RF
REMOTE CONTROL RECIEVER
SIRCS
IC602
(See Page 126)
ZOOM SW
ZOOM SWITCH
09

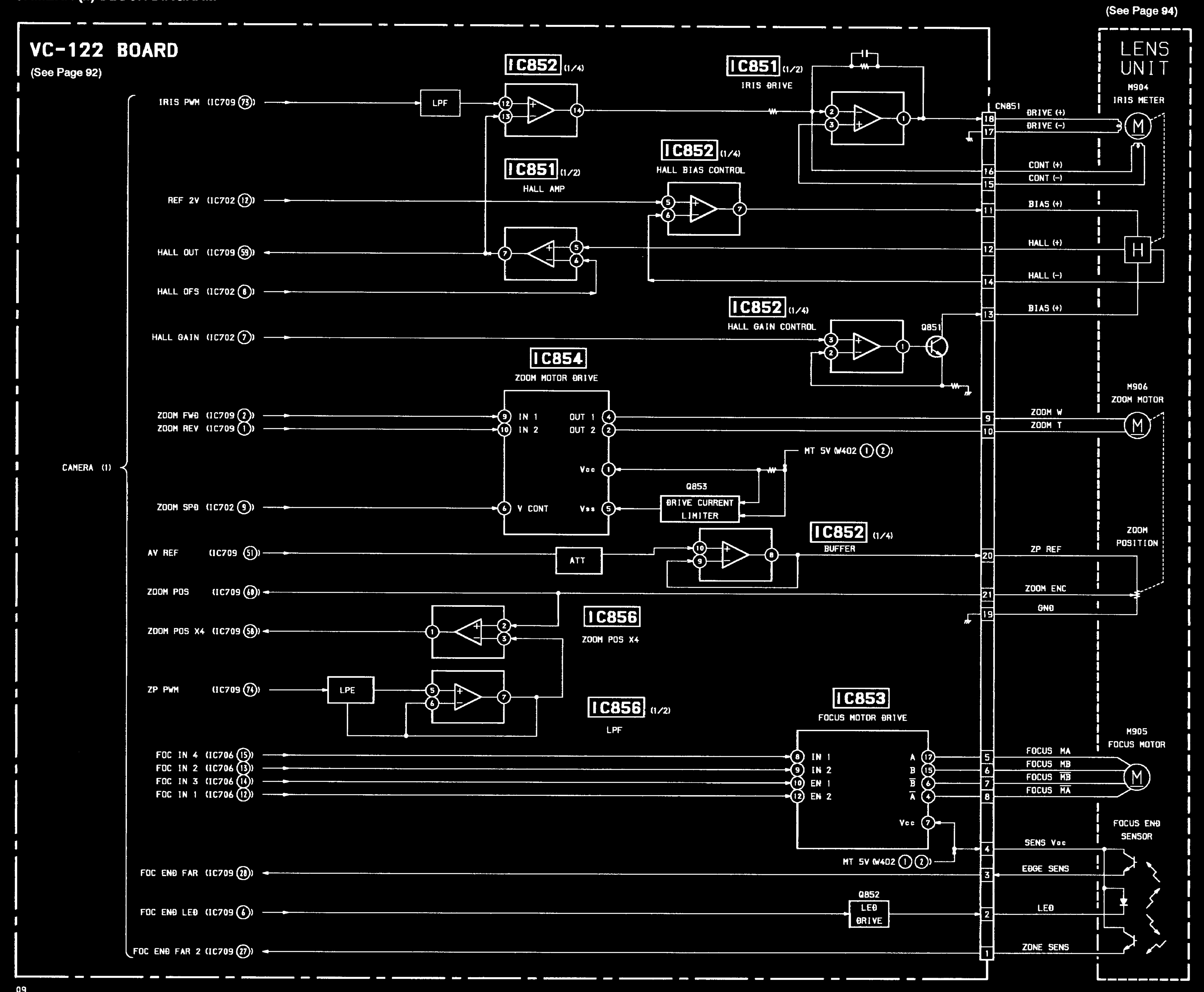
## 3-3. CAMERA (1) BLOCK DIAGRAM

(See Page 79)
CD-92 BOARD
IC875
CCD IMAGER
Q877
BUFFER
Q875, 876
V SUB REG
Q875
23V RECT
VC-122 BOARD
(See Page 85, 88)
IC805
SIGNAL SEPARATION AGC/IRIS CONTROL
SAMPL HOLD
COMP
CLAMP
BLANKING
IC804
V DRIVE
IC801
TIMING GENERATOR
Q802
BUFFER
PRIME OSCIRATION
IC803
A/D BIAS AMP
Q801
BUFFER
IC802
A/D CONVERTER
IC707
CAMERA CORE (DIGITAL CAMERA PROCESS)
1H DELAY
HORIZONTAL APERTURE COMPENSATOR
VERTICAL APERTURE COMPENSATOR
INTER FACE
R MATRIX B MATRIX
G/B WHITE BALANCE
R/B WHITE BALANCE
CHROMA GAMMA
GAMMA ROM
Y GAMMA
SOLAR
FADER OUT LEVEL
FADER
SET UP
EFECT
WHITE CLIP
SYNC BLK CHARACTER MIX
D/A CONV
ENCODER
BURST BLK ADD
PAL NTSC
IC703
CHARACTER MIX
Q705
WHITE LEVEL BLACK LEVEL
Q703
SYNC-TIP CLAMP
LPF
FL701, 702
Q706
BUFFER
Q704
BUFFER
3.58MHz BPF
CAM Y
CAM C
VIDEO (1)
IC702
D/A CONVERTER
IC706
FOCUS PRE DRIVER
IC712
EEP ROM
NON VOLATILE MEMORY
IC709
CAMERA CONTROL
IC705
DPG
IC704
SYNC GENERATOR
SYNC GENERATOR
CAMERA CD
FOR CHECK
SYSCON
POWER

## 3-4. CAMERA MICROPROCESSOR PIN FUNCTION (IC709 ON VC-122 BOARD: CXP80624-417R/424R/434R)

| Pin No. | Signal | I/O | Function |
|---|---|---|---|
| 1 | ZOOM M REV | O | Zoom motor control signal. Normally "L". 15.7 msec period PWM signal when rotating to WIDE. "H" when rotating to TELE. |
| 2 | ZOOM M FWD | O | Zoom motor control signal. Normally "L". 15.7 msec period PWM signal when rotating to TELE. "H" when rotating to WIDE. |
| 3 | | | Not used. |
| 4 | | | |
| 5 | | | |
| 6 | FOC END LED | O | Focus end sensor LED control signal. Normally "L". |
| 7 | RT05/D5 | | Not used. |
| 8 | $\overline{\text{CORE RESET}}$ | O | Camera core (IC707 on VC-122 board) reset signal. Normally "H". "L" when reset. |
| 9 | PDR RESET | O | Focus predriver (IC706 on VC-122 board) reset signal. Normally "H". "L" when reset. |
| 10 | | | Not used. |
| 11 | TG STBY0 | | |
| 12 | OPD RESET | O | OPD (IC705 on VC-122 board) reset signal. "H": camera mode. "L": VTR mode. |
| 13 | | | Not used. |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| 20 | | | |
| 21 | EPROM DO | O | Connected to +5V. |
| 22 | EPROM BUSY | I | BUSY signal from EEPROM. Normally "H". "L" pulse when data reading/writing. |
| 23 | | | Not used. |
| 24 | | | |
| 25 | | | Connected to +5V. |
| 26 | | | |
| 27 | WIDE END | | Focus Zone sensor input. Normally "L". |
| 28 | FOC END FAR | I | Focus edge sensor input. Normally "L". |
| 29 | $\overline{\text{CAM ON}}$ | O | Power supply control signal. Normally "L". |
| 30 | | | Not used. |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | | | |
| 35 | | | |
| 36 | | | |
| 37 | MP | | Connected to GND. |
| 38 | $\overline{\text{CAM RESET}}$ | I | Reset signal input. Normally "H". "L" when reset. |
| 39 | VSS | | GND |
| 40 | XTAL | O | 12 MHz clock oscillation circuit. |
| 41 | EXTAL | I | |
| 42 | $\overline{\text{CS CAM}}$ | I | Chip select signal from mode control microprocessor. (IC403 on VS-95 board) |
| 43 | VTR SI | I | Serial data input from mode control microprocessor. |
| 44 | VTR SO | O | Serial data output from mode control microprocessor. |
| 45 | VTR SCK | I | Serial data transfer clock. |
| 46 | | | Not used. |
| 47 | | | |
| 48 | | | |
| 49 | | | Not used. |
| 50 | AVSS | | GND |
| 51 | AVREF | | Analog input port reference voltage (5V). |
| 52 | AVDD | | Analog input port voltage (5V). |
| 53 | | | Connected to GND. |
| 54 | | | |
| 55 | MAN FOCUS (2) | I | Manual focus input. 0 to 5 Vdc. |
| 56 | MAN FOCUS (1) | I | Manual focus input. 0 to 5 Vdc. |
| 57 | ZOOM SW | I | Zoom key input. 0.4V: F. TELE, 1.4V: TELE and 3.7V: F. WIDE, 2.5V: WIDE and 5V: no input. |
| 58 | ZOOM POS X4 | I | Zoom position voltage. approx. 0.4V (WIDE end) to approx. 2.8V (TELE end). |
| 59 | HALL A/D | I | Hall voltage. approx. 1V (iris open) to approx. 3V (iris close). |
| 60 | ZOOM POS | I | Zoom position voltage. approx. 0.2V (WIDE end) to approx. 2.4V (TELE end). |
| 61 | | | Connected to 5V. |
| 62 | PB V | I | VD signal input from mecha controler (IC402 on VS-95 board). |
| 63 | PG5/SYNC1 | | Connected to +5V. |
| 64 | VTR SYNC | | |
| 65 | PB CTL | | |
| 66 | DPG | | |
| 67 | | | |
| 68 | AF BUSY | I | AF busy signal. |
| 69 | | | Not used. |
| 70 | | | |
| 71 | | | |
| 72 | | | |
| 73 | IRIS PWM | O | Iris control signal. 21 µsec period PWM signal. |
| 74 | ZM PWM | O | Zoom position detection voltage output. 21 µsec period PWM signal. |
| 75 | | | Not used. |
| 76 | | | |
| 77 | CAM SI | I | Serial data input. |
| 78 | CAM SO | O | Serial data output. |
| 79 | $\overline{\text{CAM SCK}}$ | O | Serial data transfer clock. |
| 80 | AJST | I | Adjustment timing pulse input. Normally "H". |
| 81 | PI/TO | | Not used. |
| 82 | PI/PWM | | |
| 83 | PI/PO | | |
| 84 | PI O | | Connected to +5V. |
| 85 | PKO | | |
| 86 | GND | | GND |
| 87 | VDD | | +5V power supply. |
| 88 | VPP | | |
| 89 | | | Not used. |
| 90 | $\overline{\text{CS PDR}}$ | O | Chip select signal to focus predriver (IC706 on VC-122 board). |
| 91 | $\overline{\text{CS CAM D/A}}$ | O | Chip select signal to camera EVR (IC702 on VC-122 board). |
| 92 | CS ROM | O | Chip select signal to EEPROM (IC712 on VC-122 board). |
| 93 | $\overline{\text{CS OPD}}$ | O | Chip select signal to OPD (IC705 on VC-122 board). |
| 94 | $\overline{\text{NTSC}}$ | O | NTSC: "L", PAL: "H". |
| 95 | $\overline{\text{CS CORE}}$ | O | Chip select signal to camera core (IC707 on VC-122 board). |
| 96 | $\overline{\text{CS TG}}$ | O | Chip select signal to timing generator (IC801 on VC-122 board). |
| 97 | | | Not used. |
| 98 | $\overline{\text{CS A/D}}$ | O | Chip select signal to Zoom position A/D converter. Not used. |
| 99 | | | Not used. |
| 100 | | | |

## 3-5. CAMERA (2) BLOCK DIAGRAM


VC-122 BOARD
(See Page 92)
(See Page 94)
LENS UNIT
CAMERA (1)
IRIS PWM (IC709 ⑦③)
REF 2V (IC702 ⑫)
HALL OUT (IC709 ⑤⑨)
HALL OFS (IC702 ⑧)
HALL GAIN (IC702 ⑦)
ZOOM FWD (IC709 ②)
ZOOM REV (IC709 ①)
ZOOM SPD (IC702 ⑨)
AV REF (IC709 ⑤①)
ZOOM POS (IC709 ⑥⓪)
ZOOM POS X4 (IC709 ⑤⑧)
ZP PWM (IC709 ⑦④)
FOC IN 4 (IC706 ⑮)
FOC IN 2 (IC706 ⑬)
FOC IN 3 (IC706 ⑭)
FOC IN 1 (IC706 ⑫)
FOC END FAR (IC709 ②⑧)
FOC END LED (IC709 ⑥)
FOC END FAR 2 (IC709 ②⑦)
LPF
IC852 (1/4)
IC851 (1/2)
HALL AMP
IC851 (1/2)
IRIS DRIVE
IC852 (1/4)
HALL BIAS CONTROL
IC852 (1/4)
HALL GAIN CONTROL
Q851
IC854
ZOOM MOTOR DRIVE
IN 1
IN 2
OUT 1
OUT 2
Vcc
V CONT
Vss
MT 5V (W402 ① ②)
Q853
DRIVE CURRENT LIMITER
ATT
IC852 (1/4)
BUFFER
IC856
ZOOM POS X4
LPE
IC856 (1/2)
LPF
IC853
FOCUS MOTOR DRIVE
IN 1
IN 2
EN 1
EN 2
A
B
$\overline{\text{B}}$
$\overline{\text{A}}$
Vcc
MT 5V (W402 ① ②)
Q852
LED DRIVE
CN851
DRIVE (+)
DRIVE (−)
CONT (+)
CONT (−)
BIAS (+)
HALL (+)
HALL (−)
BIAS (+)
ZOOM W
ZOOM T
ZP REF
ZOOM ENC
GND
FOCUS MA
FOCUS MB
FOCUS $\overline{\text{MB}}$
FOCUS $\overline{\text{MA}}$
SENS Vcc
EDGE SENS
LED
ZONE SENS
M904
IRIS METER
M906
ZOOM MOTOR
ZOOM POSITION
M905
FOCUS MOTOR
FOCUS END SENSOR
09

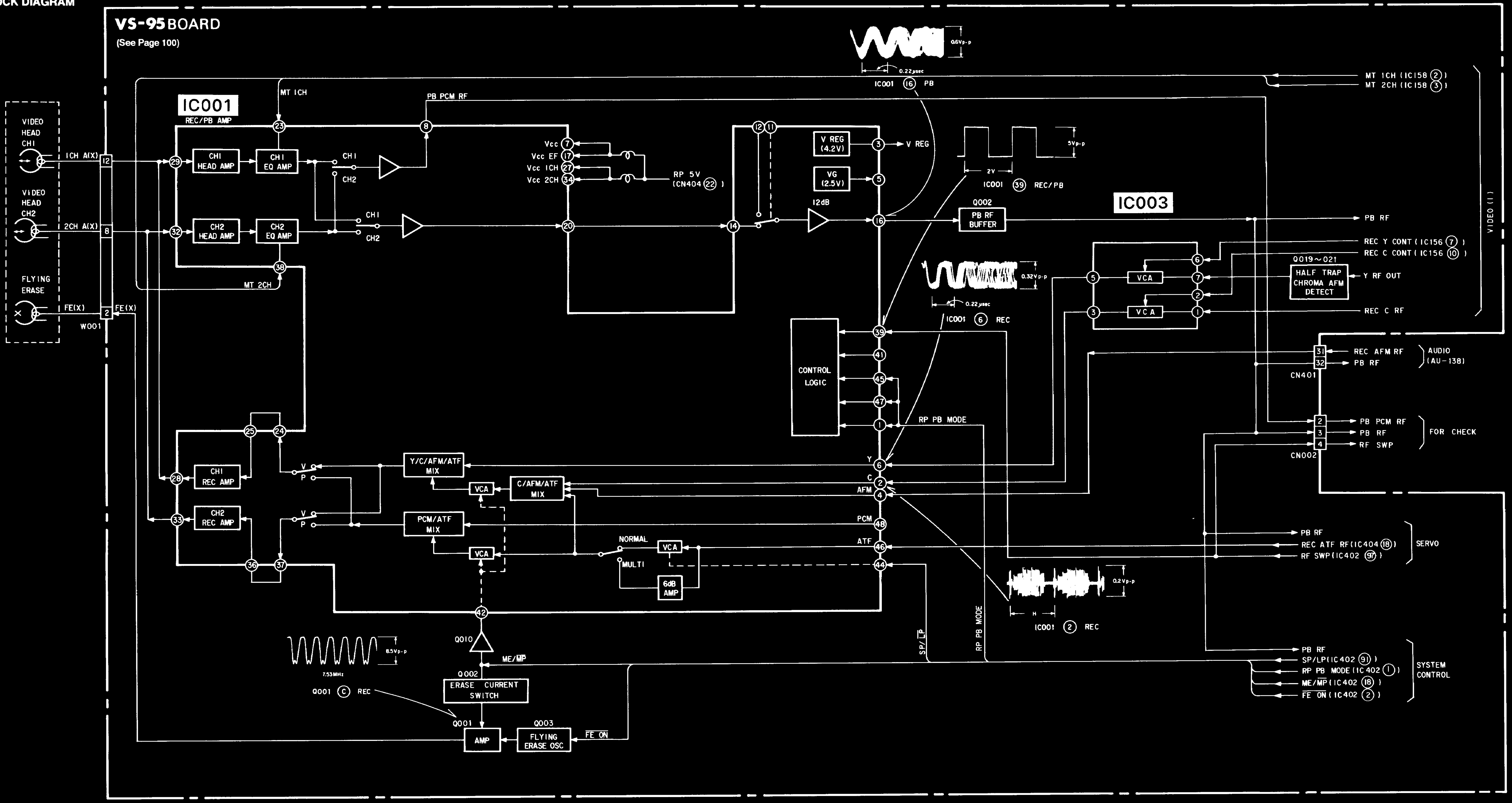
| Pin No. | Signal | I/O | Function |
|---|---|---|---|
| 49 | | | Not used. |
| 50 | AVSS | | GND |
| 51 | AVREF | | Analog input port reference voltage (5V). |
| 52 | AVDD | | Analog input port voltage (5V). |
| 53 | | | Connected to GND. |
| 54 | | | |
| 55 | MAN FOCUS (2) | I | Manual focus input. 0 to 5 Vdc. |
| 56 | MAN FOCUS (1) | I | Manual focus input. 0 to 5 Vdc. |
| 57 | ZOOM SW | I | Zoom key input. 0.4V: F. TELE, 1.4V: TELE and 3.7V: F. WIDE, 2.5V: WIDE and 5V: no input. |
| 58 | ZOOM POS X4 | I | Zoom position voltage. approx. 0.4V (WIDE end) to approx. 2.8V (TELE end). |
| 59 | HALL A/D | I | Hall voltage. approx. 1V (iris open) to approx. 3V (iris close). |
| 60 | ZOOM POS | I | Zoom position voltage. approx. 0.2V (WIDE end) to approx. 2.4V (TELE end). |
| 61 | | | Connected to 5V. |
| 62 | PB V | I | VD signal input from mecha controler (IC402 on VS-95 board). |
| 63 | PG5/SYNC1 | | Connected to +5V. |
| 64 | VTR SYNC | | |
| 65 | PB CTL | | |
| 66 | DPG | | |
| 67 | | | |
| 68 | AF BUSY | I | AF busy signal. |
| 69 | | | Not used. |
| 70 | | | |
| 71 | | | |
| 72 | | | |
| 73 | IRIS PWM | O | Iris control signal. 21 µsec period PWM signal. |
| 74 | ZM PWM | O | Zoom position detection voltage output. 21 µsec period PWM signal. |
| 75 | | | Not used. |
| 76 | | | |
| 77 | CAM SI | I | Serial data input. |
| 78 | CAM SO | O | Serial data output. |
| 79 | $\overline{\text{CAM SCK}}$ | O | Serial data transfer clock. |
| 80 | AJST | I | Adjustment timing pulse input. Normally "H". |
| 81 | PI/TO | | Not used. |
| 82 | PI/PWM | | |
| 83 | PI/PO | | |
| 84 | PI O | | Connected to +5V. |
| 85 | PKO | | |
| 86 | GND | | GND |
| 87 | VDD | | +5V power supply. |
| 88 | VPP | | |
| 89 | | | Not used. |
| 90 | $\overline{\text{CS PDR}}$ | O | Chip select signal to focus predriver (IC706 on VC-122 board). |
| 91 | $\overline{\text{CS CAM D/A}}$ | O | Chip select signal to camera EVR (IC702 on VC-122 board). |
| 92 | CS ROM | O | Chip select signal to EEPROM (IC712 on VC-122 board). |
| 93 | $\overline{\text{CS OPD}}$ | O | Chip select signal to OPD (IC705 on VC-122 board). |
| 94 | $\overline{\text{NTSC}}$ | O | NTSC: "L", PAL: "H". |
| 95 | $\overline{\text{CS CORE}}$ | O | Chip select signal to camera core (IC707 on VC-122 board). |
| 96 | $\overline{\text{CS TG}}$ | O | Chip select signal to timing generator (IC801 on VC-122 board). |
| 97 | | | Not used. |
| 98 | $\overline{\text{CS A/D}}$ | O | Chip select signal to Zoom position A/D converter. Not used. |
| 99 | | | Not used. |
| 100 | | | |

| Pin No. | Signal | I/O | Function |
|---|---|---|---|
| 49 | | | Not used. |
| 50 | AVSS | | GND |
| 51 | AVREF | | Analog input port reference voltage (5V). |
| 52 | AVDD | | Analog input port voltage (5V). |
| 53 | | | Connected to GND. |
| 54 | | | |
| 55 | MAN FOCUS (2) | I | Manual focus input. 0 to 5 Vdc. |
| 56 | MAN FOCUS (1) | I | Manual focus input. 0 to 5 Vdc. |
| 57 | ZOOM SW | I | Zoom key input. 0.4V: F. TELE, 1.4V: TELE and 3.7V: F. WIDE, 2.5V: WIDE and 5V: no input. |
| 58 | ZOOM POS X4 | I | Zoom position voltage. approx. 0.4V (WIDE end) to approx. 2.8V (TELE end). |
| 59 | HALL A/D | I | Hall voltage. approx. 1V (iris open) to approx. 3V (iris close). |
| 60 | ZOOM POS | I | Zoom position voltage. approx. 0.2V (WIDE end) to approx. 2.4V (TELE end). |
| 61 | | | Connected to 5V. |
| 62 | PB V | I | VD signal input from mecha controler (IC402 on VS-95 board). |
| 63 | PGS/SYNC1 | | Connected to +5V. |
| 64 | VTR SYNC | | |
| 65 | PB CTL | | |
| 66 | DPG | | |
| 67 | | | |
| 68 | AF BUSY | I | AF busy signal. |
| 69 | | | Not used. |
| 70 | | | |
| 71 | | | |
| 72 | | | |
| 73 | IRIS PWM | O | Iris control signal. 21 μsec period PWM signal. |
| 74 | ZM PWM | O | Zoom position detection voltage output. 21 μsec period PWM signal. |
| 75 | | | Not used. |
| 76 | | | |
| 77 | CAM SI | I | Serial data input. |
| 78 | CAM SO | O | Serial data output. |
| 79 | $\overline{\text{CAM SCK}}$ | O | Serial data transfer clock. |
| 80 | AJST | I | Adjustment timing pulse input. Normally "H". |
| 81 | PI/TO | | Not used. |
| 82 | PI/PWM | | |
| 83 | PI/PO | | |
| 84 | PI O | | Connected to +5V. |
| 85 | PKO | | |
| 86 | GND | | GND |
| 87 | VDD | | +5V power supply. |
| 88 | VPP | | |
| 89 | | | Not used. |
| 90 | $\overline{\text{CS FDR}}$ | O | Chip select signal to focus predriver (IC706 on VC-122 board). |
| 91 | $\overline{\text{CS CAM D/A}}$ | O | Chip select signal to camera EVR (IC702 on VC-122 board). |
| 92 | CS ROM | O | Chip select signal to EEPROM (IC712 on VC-122 board). |
| 93 | $\overline{\text{CS OPD}}$ | O | Chip select signal to OPD (IC705 on VC-122 board). |
| 94 | $\overline{\text{NTSC}}$ | O | NTSC: "L", PAL: "H". |
| 95 | CS CORE | O | Chip select signal to camera core (IC707 on VC-122 board). |
| 96 | $\overline{\text{CS TG}}$ | O | Chip select signal to timing generator (IC801 on VC-122 board). |
| 97 | | | Not used. |
| 98 | $\overline{\text{CS A/D}}$ | O | Chip select signal to Zoom position A/D converter. Not used. |
| 99 | | | Not used. |
| 100 | | | |

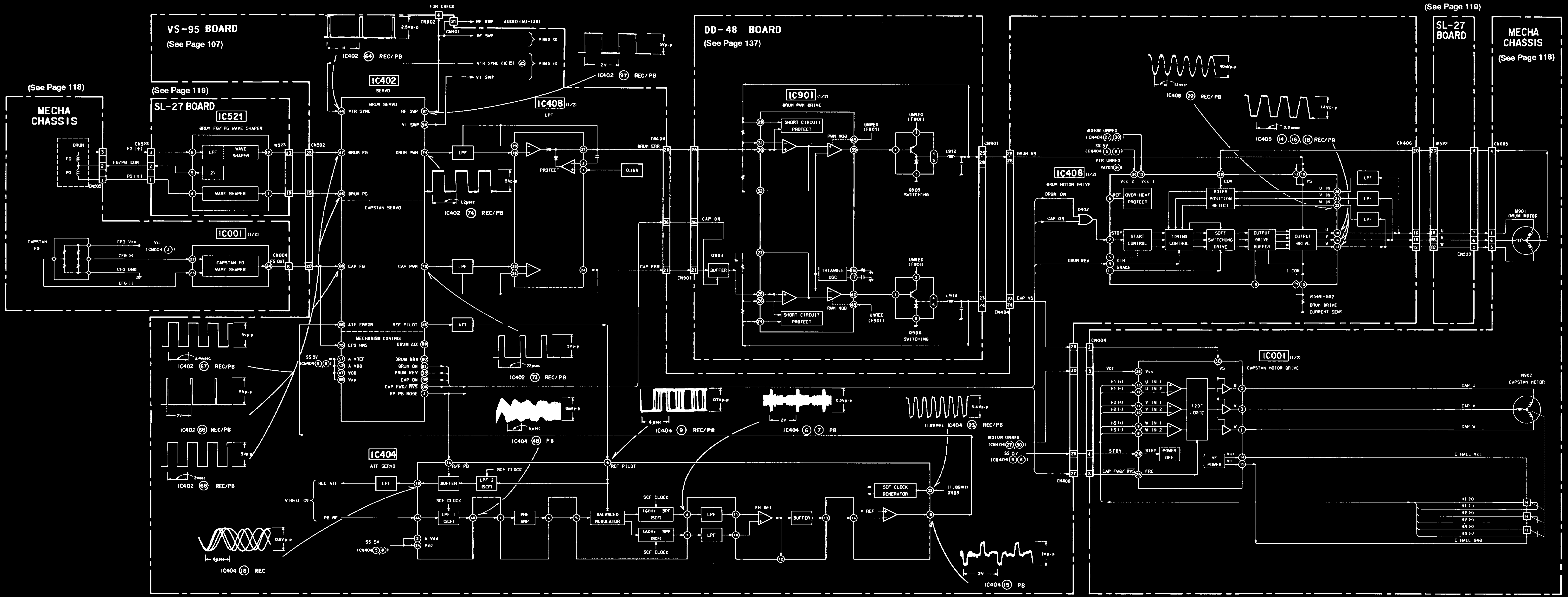
## 3-6. VIDEO (1) BLOCK DIAGRAM

VS-95 BOARD
(See Page 104)
(See Page 117)
JK-91 BOARD
IC151
Y PROCESS
IC152
CHROMA PROCESS
IC154
IC155
IC156
IC158
IC159
MAIN-EMPHASIS
SUB-EMPHASIS
NOISE CANSEL
Y COMB FILTER
COMB FILTER
Y/C MIX
CHARACTER MIX
CAMERA IN
AUDIO

## 3-7. VIDEO (2) BLOCK DIAGRAM


VS-95 BOARD
(See Page 100)
IC001
REC/PB AMP
IC003
VIDEO HEAD CH1
VIDEO HEAD CH2
FLYING ERASE
1CH A(X)
2CH A(X)
FE(X)
W001
MT 1CH
MT 2CH
PB PCM RF
CH1 HEAD AMP
CH1 EQ AMP
CH2 HEAD AMP
CH2 EQ AMP
CH1
CH2
Vcc
Vcc EF
Vcc 1CH
Vcc 2CH
RP 5V (CN404 ㉒)
V REG (4.2V)
VG (2.5V)
V REG
12dB
Q002
PB RF BUFFER
CONTROL LOGIC
RP PB MODE
Y
C
AFM
PCM
ATF
CH1 REC AMP
CH2 REC AMP
Y/C/AFM/ATF MIX
C/AFM/ATF MIX
PCM/ATF MIX
VCA
NORMAL
MULTI
6dB AMP
V
P
Q010
ME/MP
Q002
ERASE CURRENT SWITCH
Q001
AMP
Q003
FLYING ERASE OSC
FE ON
Q001 ⓒ REC
7.53MHz
8.5Vp-p
0.6Vp-p
0.22μsec
IC001 ⑯ PB
5Vp-p
2V
IC001 ㊴ REC/PB
0.32Vp-p
0.22μsec
IC001 ⑥ REC
0.2Vp-p
H
IC001 ② REC
Q019～021
HALF TRAP CHROMA AFM DETECT
MT 1CH (IC158 ②)
MT 2CH (IC158 ③)
PB RF
REC Y CONT (IC156 ⑦)
REC C CONT (IC156 ⑩)
Y RF OUT
REC C RF
VIDEO (1)
REC AFM RF
PB RF
AUDIO (AU-138)
CN401
PB PCM RF
PB RF
RF SWP
FOR CHECK
CN002
PB RF
REC ATF RF (IC404 ⑱)
RF SWP (IC402 ㊲)
SERVO
SP/LP
RP PB MODE
PB RF
SP/LP (IC402 ㉛)
RP PB MODE (IC402 ①)
ME/MP (IC402 ⑱)
FE ON (IC402 ②)
SYSTEM CONTROL

## 3-8. SERVO BLOCK DIAGRAM


(See Page 118)
MECHA CHASSIS
DRUM
FG
PG
CN005
CAPSTAN FG
(See Page 119)
SL-27 BOARD
IC521
DRUM FG/ PG WAVE SHAPER
CN523
FG (+)
FG/PG COM
PG (+)
LPF
WAVE SHAPER
2V
WAVE SHAPER
W523
IC001 (1/2)
CFG Vcc
Vcc (CN004 ③)
CFG (+)
CFG GND
CFG (-)
CAPSTAN FG WAVE SHAPER
CN004
FG OUT
VS-95 BOARD
(See Page 107)
CN502
FOR CHECK
CN002
CN401
RF SWP
AUDIO (AU-138)
RF SWP
VIDEO (2)
VTR SYNC (IC151 ㉕)
VIDEO (1)
V1 SWP
2.5Vp-p
H
IC402 (64) REC/PB
IC402
SERVO
DRUM SERVO
VTR SYNC
RF SWP
V1 SWP
DRUM FG
DRUM PWM
DRUM PG
CAPSTAN SERVO
CAP FG
CAP PWM
ATF ERROR
REF PILOT
MECHANISM CONTROL
CFG HMS
DRUM ACC
SS 5V
(CN404 ⑤ ⑧)
A VREF
A VDD
VDD
Vpp
DRUM BRK
DRUM ON
DRUM REV
CAP ON
CAP FWD/ RVS
RP PB MODE
5Vp-p
2V
IC402 (97) REC/PB
5Vp-p
1.2μsec
IC402 (74) REC/PB
IC408 (1/2)
LPF
LPF
PROTECT
0.16V
LPF
ATT
5Vp-p
22μsec
IC402 (73) REC/PB
5Vp-p
2.4msec.
IC402 (67) REC/PB
5Vp-p
2V
IC402 (66) REC/PB
5Vp-p
2msec
IC402 (68) REC/PB
CN404
DRUM ERR
CAP ERR
CN901
DD-48 BOARD
(See Page 137)
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
UNREG (F901)
UNREG (F901)
Q905 SWITCHING
L912
CAP ON
Q901
BUFFER
TRIANGLE OSC
PWM MOD
SHORT CIRCUIT PROTECT
UNREG (F901)
UNREG (F901)
Q906 SWITCHING
L913
CN901
DRUM VS
CAP VS
CN404
8mVp-p
6μsec
IC404 (48) PB
0.7Vp-p
6μsec
IC404 ⑨ REC/PB
0.3Vp-p
2V
IC404 ⑥ ⑦ PB
5.4Vp-p
11.89MHz IC404 ㉓ REC/PB
IC404
ATF SERVO
REC ATF
VIDEO (2)
PB RF
LPF
R/P PB
BUFFER
LPF 2 (SCF)
SCF CLOCK
SCF CLOCK
LPF 1 (SCF)
PRE AMP
A Vdd
Vdd
SS 5V
(CN404 ⑤ ⑧)
REF PILOT
BALANCED MODULATOR
SCF CLOCK
16KHz BPF (SCF)
46KHz BPF (SCF)
SCF CLOCK
LPF
LPF
FH DET
BUFFER
V REF
SCF CLOCK GENERATOR
11.89MHz
X403
0.6Vp-p
6μsec
IC404 ⑱ REC
1Vp-p
2V
IC404 ⑮ PB
40mVp-p
1.1msec
IC408 ㉒ REC/PB
1.4Vp-p
2.2msec
IC408 ⑭, ⑯, ⑱ REC/PB
MOTOR UNREG
(CN404 ㉗, ㉚)
SS 5V
(CN404 ⑤ ⑧)
VTR UNREG
(W201 ㉞)
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM ON
CAP ON
D402
DRUM REV
Vcc 2
Vcc 1
REF
OVER-HEAT PROTECT
COM
ROTER POSITION DETECT
VS
U IN
V IN
W IN
STBY
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
DIR
BRAKE
I COM
R549-552
DRUM DRIVE CURRENT SENS
LPF
LPF
LPF
U
V
W
CN406
(See Page 119)
SL-27 BOARD
W522
CN523
(See Page 118)
MECHA CHASSIS
CN005
M901
DRUM MOTOR
CN004
IC001 (1/2)
CAPSTAN MOTOR DRIVE
Vcc
VS
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
STBY
POWER OFF
CAP FWD/ RVS
FRC
HE POWER
VH+
VH-
MOTOR UNREG
(CN404 ㉗, ㉚)
SS 5V
(CN404 ⑤ ⑧)
CN406
M902
CAPSTAN MOTOR
CAP U
CAP V
CAP W
C HALL Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
C HALL GND

## 3-9. SYSTEM CONTROL BLOCK DIAGRAM

VK-27 BOARD
(See Page 117)
ED-35 BOARD
(See Page 116)
CF-32 BOARD
(See Page 115)
CN-65 BOARD
(See Page 115)
VS-95 BOARD
(See Page 107)
MF-191 BOARD
(See Page 116)
SW-205 BOARD
(See Page 137)
DD-48 BOARD
(See Page 137)
LI-44 BOARD
(See Page 117)
ZOOM SWITCH UNIT
(See Page 126)
AU-138 BOARD
(See Page 125)
IC403
MODE CONTROL (MASTER)
IC407
SIRCS CONTROL
IC405
EEPROM
IC402
MECHANISM CONTROL
IC410
LOADING MOTOR DRIVE
IC409
LANC I/O
IC401
IC406
CHARACTER GENERATOR
IC602
REMOTE CONTROL RECEIVER
IC404
SP/LP DETECT CLOG DETECT
IC501
SL-27 BOARD
(See Page 119)
MECHA SHASSIS
(See Page 118)
LM-40 BOARD
FP-442 BOARD
LS-33 BOARD
SERVO
CAMERA
VIDEO (2)
VIDEO (1)
AUDIO
INTEGRATOR
LITHIUM BATTERY

## 3-10. MECHANISM CONTROL MICROPROCESSOR PIN FUNCTION (IC402 ON VS-95 BOARD: CXP80624)

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 1 | PB3/PP011 | RP PB MODE | O | RP | REC/PB select signal of REC/PB amplifier (IC001 on VS-95 board) and ATF servo IC (IC404 on VS-95 board). "H": PB. |
| 2 | PB2/PP010 | FE ON | O | RP | Flying erase oscillation ON/OFF control signal. "L": oscillation. |
| 3 | PB1/PP09 | JOG VD | O | VA | False VD signal to be inserted into playback video signal during variable speed playback. |
| 4 | PB0/PP08 | JOG | O | VA | Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback. |
| 5 | PC7/RT07 | JACK IN/OUT | I | VA | Not used. Connected to +5V. |
| 6 | PC6/RT06 | 1.7M DET | I | VA | Not used. |
| 7 | PC5/RT05 | JACK MONO/STE DET | I | VA | |
| 8 | PC4/RT04 | INT VD | I | | |
| 9 | PC3/RT03 | PB V (SYSTEM SYNC) | O | MODE CON | V sync for mode controller. |
| 10 | PC2/RT018 | SYNC DET OUT | O | VA | Sync detect output. "L" when Sync is detected. |
| 11 | PC1/RT017 | E/L DET | I | VA | Not used. |
| 12 | PC0/RT016 | MIC MONO/ST DET | I | AU | |
| 13 | PJ7 | M SW 0 | I | MD | Mode switch input. |
| 14 | PJ6 | M SW 1 | I | MD | |
| 15 | PJ5 | M SW 2 | I | MD | |

| | BL | END | EJECT | USE | LOAD | READY | TURN | REC/PB | FF |
|---|---|---|---|---|---|---|---|---|---|
| M SW 0 | L | L | L | H | L | H | H | L | L |
| M SW 1 | L | H | L | L | L | L | H | H | L |
| M SW 2 | L | H | H | H | H | L | L | L | L |

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 16 | PJ4 | CC DOWN | I | MD | Cassette compartment down switch input. "L": down. |
| 17 | PJ3 | REC PROOF | I | MD | Erasure protection switch input. "L" when REC prohibit. |
| 18 | PJ2 | ME/MP | I | MD | ME/MP switch input. "L": MP, "H": ME. |
| 19 | PJ1 | HG/NOR | I | MD | Connected to GND. |
| 20 | PJ0 | VIDEO MUTE | O | VA | Video output mute signal. "H": mute. |
| 21 | PD7 | LINE MIX | I | VA | Not used. |
| 22 | PD6 | MAT SEL 1 | I | VA | |
| 23 | PD5 | MAT SEL 2 | I | VA | |
| 24 | PD4 | MAT ON/OFF | O | VA | |
| 25 | PD3 | E MODE | O | VA | |
| 26 | PD2 | CAM/LINE | O | VA | Camera input/line input select signal. "H" when camera input. |
| 27 | PD1 | DS ON | O | VA | Data screen ON/OFF signal. "H": ON. |
| 28 | PD0 | EDIT | O | VA | Video circuit EDIT/NORMAL switch signal. "L": EDIT. |
| 29 | PH7 | UNLOAD | O | SS | Loading motor control signal. "H" or "H" pulse when unloading. |
| 30 | PH6 | LOAD | O | SS | Loading motor control signal. "H" or "H" pulse when loading. |
| 31 | PH5 | LM LIM COM | O | SS | Loading motor limiter control signal. Temporary "H" when loading. |
| 32 | PH4 | COMP REC | O | VA | Not used. |
| 33 | PH3 | DRUM REV | O | SS | Drum rotating control signal . Normally "L". |
| 34 | PH2 | | O | | N.C. |
| 35 | PH1 | | O | | |
| 36 | PH0 | REEL HALL CONT | O | SS | Reel FG sensor (HALL element) power supply control signal. |
| 37 | MP | MP | | | Connected to GND. |
| 38 | RST | RESET | I | MODE CON | Reset signal from mode control microprocessor. "L" when reset. |
| 39 | VSS | VSS | | | GND |
| 40 | XTAL | XTAL | I | SS | 11.89 MHz clock oscillation circuit. |
| 41 | EXTAL | EXTAL | O | SS | |
| 42 | CSO | VTR COSMO CS | I | MODE CON | Chip select signal from mode control microprocessor (VS-95 board IC403) |
| 43 | S10 | DATA TO SLVE | I | MODE CON | Serial data input from mode control microprocessor. |
| 44 | S00 | DATA TO MSTR | O | MODE CON | Serial data output to mode control microprocessor. |
| 45 | SCKO | SCK | I | MODE CON | Serial clock input from mode control microprocessor. |

## 3-10. MECHANISM CONTROL MICROPROCESSOR PIN FUNCTION (IC402 ON VS-95 BOARD: CXP80624)

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 1 | PB3/PP011 | RP PB MODE | O | RP | REC/PB select signal of REC/PB amplifier (IC001 on VS-95 board) and ATF servo IC (IC404 on VS-95 board). "H": PB. |
| 2 | PB2/PP010 | $\overline{\text{FE ON}}$ | O | RP | Flying erase oscillation ON/OFF control signal. "L": oscillation. |
| 3 | PB1/PP09 | JOG VD | O | VA | False VD signal to be inserted into playback video signal during variable speed playback. |
| 4 | PB0/PP08 | JOG | O | VA | Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback. |
| 5 | PC7/RT07 | JACK $\overline{\text{IN}}$/OUT | I | VA | Not used. Connected to +5V. |
| 6 | PC6/RT06 | 4.7M DET | I | VA | Not used. |
| 7 | PC5/RT05 | JACK $\overline{\text{MONO}}$/STE DET | I | VA | |
| 8 | PC4/RT04 | INT VD | I | | |
| 9 | PC3/RT03 | PB V (SYSTEM SYNC) | O | MODE CON | V sync for mode controller. |
| 10 | PC2/RT018 | $\overline{\text{SYNC DET OUT}}$ | O | VA | Sync detect output. "L" when Sync is detected. |
| 11 | PC1/RT017 | E/$\overline{\text{L}}$ DET | I | VA | Not used. |
| 12 | PC0/RT016 | MIC $\overline{\text{MONO}}$/ST DET | I | AU | |
| 13 | PJ7 | M SW 0 | I | MD | Mode switch input. |
| 14 | PJ6 | M SW 1 | I | MD | |
| 15 | PJ5 | M SW 2 | I | MD | |
| 16 | PJ4 | $\overline{\text{CC DOWN}}$ | I | MD | Cassette compartment down switch input. "L": down. |
| 17 | PJ3 | $\overline{\text{REC PROOF}}$ | I | MD | Erasure protection switch input. "L" when REC prohibit. |
| 18 | PJ2 | ME/$\overline{\text{MP}}$ | I | MD | ME/MP switch input. "L": MP, "H": ME. |
| 19 | PJ1 | HG/$\overline{\text{NOR}}$ | I | MD | Connected to GND. |
| 20 | PJ0 | VIDEO MUTE | O | VA | Video output mute signal. "H": mute. |
| 21 | PD7 | LINE MIX | I | VA | Not used. |
| 22 | PD6 | MAT SEL 1 | I | VA | |
| 23 | PD5 | MAT SEL 2 | I | VA | |
| 24 | PD4 | MAT ON/$\overline{\text{OFF}}$ | O | VA | |
| 25 | PD3 | E MODE | O | VA | |
| 26 | PD2 | CAM/$\overline{\text{LINE}}$ | O | VA | Camera input/line input select signal. "H" when camera input. |
| 27 | PD1 | DS ON | O | VA | Data screen ON/OFF signal. "H": ON. |
| 28 | PD0 | $\overline{\text{EDIT}}$ | O | VA | Video circuit EDIT/NORMAL switch signal. "L": EDIT. |
| 29 | PH7 | UNLOAD | O | SS | Loading motor control signal. "H" or "H" pulse when unloading. |
| 30 | PH6 | LOAD | O | SS | Loading motor control signal. "H" or "H" pulse when loading. |
| 31 | PH5 | $\overline{\text{LM LIM COM}}$ | O | SS | Loading motor limiter control signal. Temporary "H" when loading. |
| 32 | PH4 | COMP REC | O | VA | Not used. |
| 33 | PH3 | DRUM REV | O | SS | Drum rotating control signal . Normally "L". |
| 34 | PH2 | | O | | N.C. |
| 35 | PH1 | | O | | |
| 36 | PH0 | $\overline{\text{REEL HALL CONT}}$ | O | SS | Reel FG sensor (HALL element) power supply control signal. |
| 37 | MP | MP | | | Connected to GND. |
| 38 | RST | $\overline{\text{RESET}}$ | I | MODE CON | Reset signal from mode control microprocessor. "L" when reset. |
| 39 | VSS | VSS | | | GND |
| 40 | XTAL | XTAL | I | SS | 11.89 MHz clock oscillation circuit. |
| 41 | EXTAL | EXTAL | O | SS | |
| 42 | CS0 | $\overline{\text{VTR COSMO CS}}$ | I | MODE CON | Chip select signal from mode control microprocessor (VS-95 board IC403) |
| 43 | SI0 | DATA TO SLVE | I | MODE CON | Serial data input from mode control microprocessor. |
| 44 | SO0 | DATA TO MSTR | O | MODE CON | Serial data output to mode control microprocessor. |
| 45 | SCK0 | SCK | I | MODE CON | Serial clock input from mode control microprocessor. |

| | SL | END | EJECT | USE | LOAD | READY | TURN | REC/PB | FF |
|---|---|---|---|---|---|---|---|---|---|
| M SW 0 | L | L | L | H | L | H | H | L | L |
| M SW 1 | L | H | L | L | L | L | H | H | L |
| M SW 2 | L | H | H | H | H | L | L | L | L |

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 46 | PF7/AN11 | AUDIO MUTE | O | VA | Audio output mute signal. "H": mute. |
| 47 | PF6/AN10 | 1.7M OFF | O | VA | Not used. |
| 48 | PF5/AN9 | GND | I |  | GND |
| 49 | PF4/AN8 | GND | I |  |  |
| 50 | AVSS | AVSS |  |  | Analog port GND. |
| 51 | AVREF | AVREF |  |  | Analog port reference voltage. Connected to +5V. |
| 52 | AVDD | VDD |  |  | Analog port power supply (5V). |
| 53 | PF3/AN7 | N.C. |  |  | Connected to GND. |
| 54 | PF2/AN6 | END SENS | I | SS | Tape end detection signal. Normally "L", "H" pulse: tape end. |
| 55 | PF1/AN5 | TOP SENS | I | SS | Tape top detection signal. Normally "L", "H" pulse: tape top. |
| 56 | PF0/AN4 | DEW | I | SS | Dew condensation detection signal. "L" when dew condensation. |
| 57 | AN3 | BATT SENSE | I | SS | Battery voltage input for battery end detection. 1/2 divided by RB401. |
| 58 | AN2 | ATF ERROR | I | SS | ATF error, ATF lock error input. |
| 59 | AN1 | S REEL FG | I | SS | S reel FG signal input. |
| 60 | AN0 | T REEL FG | I | SS | T reel FG signal input. |
| 61 | PG7/EXI1 | PG7 (N.C.) |  |  | Connected to GND. |
| 62 | PG6/EXI0 | CAM VD | I | CAM SG | VD signal from camera circuit sync generator. V period pulse. |
| 63 | PG5/SYNC1 | FLD | I | CAM SG | FIELD signal from camera circuit sync generator. 2V period pulse. |
| 64 | PG4/SYNC0 | VTR SYNC | I | VA | Composite sync signal separated from REC/PB Y signal. |
| 65 | PG3/PBCTL | PB SP/LP DET | I | SS | Discriminates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP. |
| 66 | PG2/DPG | DRUM PG | I | SS | Drum PG signal input. For drum phase servo 33.3 msec period "H" pulse. |
| 67 | PG1/DFG | DRUM FG | I | SS | Drum FG signal input. For drum speed servo 2.8 msec period pulse. |
| 68 | PG0/CFG | CAP FG | I | MD | Capstan FG signal input. For capstan speed servo. Approx. 994 Hz when REC/PB (SP). |
| 69 | PE7/DAB0 | N.C. | O |  | N.C. |
| 70 | PE6/DAB0 | T/E LED ON | O | SS | Tape LED ON/OFF signal. 100 msec period "H" pulse when REC/PB. |
| 71 | PE5/DAA1 | N.C. | O |  | N.C. |
| 72 | PE4/DAA0 | N.C. | O |  |  |
| 73 | PE3/PWM1 | CAP PWM | O | SS | Capstan error signal output 20.15 $\mu$sec PWM signal. |
| 74 | PE2/PWM0 | DRUM PWM | O | SS | Drum error signal output 20.15 $\mu$sec PWM signal. |
| 75 | PE1/EC/INT2 | C FG | I | MD | Capstan FG signal input. For tape counter. |
| 76 | PE0/INT0 | $\overline{\text{S JACK IN}}$ |  |  | Not used, connected to +5V. |
| 77 | P17/ST1 | LANC IN | I | SS | Control L serial data input. |
| 78 | P16/SO1 | LANC OUT | O | SS | Control L serial data output. |
| 79 | P15/SCK1 | LM LIMIT DET | I | SS | Loading motor limiter ON detection signal. Normally "H", "L" when limiter ON. |
| 80 | P14/INT1 | AGC SLOW |  |  | Not used. |
| 81 | P13/TO | DRUM ON | O | SS | Drum driver ON/OFF control signal. "H" when drum ON. |
| 82 | P12/PWM | CLOG | O | SS | Head clog detection signal. "L" when no trouble. |
| 83 | P11/PO | REF PILOT | O | SS | ATF servo reference pilot signal. Synchronized when drum rotation to output by selecting four frequencies. f1=102.52 kHz, f2=118.95 kHz, f3=165.21 kHz and f4=148.69 kHz. |
| 84 | P10/PCK |  |  |  | Connected to +5V. |
| 85 | PKO | 13/10 SW | I | MD | Not used. |
| 86 | VSS | VSS |  |  | GND |
| 87 | VDD | VDD |  |  | VDD |
| 88 | N.C. | (VPP) |  |  | Connected to +5V. |
| 89 | PA7/PP07 | DRUM ACC | O | SS | Drum motor acceleration signal. Not used. |

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 46 | PF7/AN11 | AUDIO MUTE | O | VA | Audio output mute signal. "H": mute. |
| 47 | PF6/AN10 | 1.7M OFF | O | VA | Not used. |
| 48 | PF5/AN9 | GND | I |  | GND |
| 49 | PF4/AN8 | GND | I |  |  |
| 50 | AVSS | AVSS |  |  | Analog port GND. |
| 51 | AVREF | AVREF |  |  | Analog port reference voltage. Connected to +5V. |
| 52 | AVDD | VDD |  |  | Analog port power supply (5V). |
| 53 | PF3/AN7 | N.C. |  |  | Connected to GND. |
| 54 | PF2/AN6 | END SENS | I | SS | Tape end detection signal. Normally "L", "H" pulse: tape end. |
| 55 | PF1/AN5 | TOP SENS | I | SS | Tape top detection signal. Normally "L", "H" pulse: tape top. |
| 56 | PF0/AN4 | DEW | I | SS | Dew condensation detection signal. "L" when dew condensation. |
| 57 | AN3 | BATT SENSE | I | SS | Battery voltage input for battery end detection. 1/2 divided by RB401. |
| 58 | AN2 | ATF ERROR | I | SS | ATF error, ATF lock error input. |
| 59 | AN1 | S REEL FG | I | SS | S reel FG signal input. |
| 60 | AN0 | T REEL FG | I | SS | T reel FG signal input. |
| 61 | PG7/EXI1 | PG7 (N.C.) |  |  | Connected to GND. |
| 62 | PG6/EXI0 | CAM VD | I | CAM SG | VD signal from camera circuit sync generator. V period pulse. |
| 63 | PG5/SYNC1 | FLD | I | CAM SG | FIELD signal from camera circuit sync generator. 2V period pulse. |
| 64 | PG4/SYNC0 | VTR SYNC | I | VA | Composite sync signal separated from REC/PB Y signal. |
| 65 | PG3/PBCTL | PB SP/LP DET | I | SS | Discriminates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP. |
| 66 | PG2/DPG | DRUM PG | I | SS | Drum PG signal input. For drum phase servo 33.3 msec period "H" pulse. |
| 67 | PG1/DFG | DRUM FG | I | SS | Drum FG signal input. For drum speed servo 2.8 msec period pulse. |
| 68 | PG0/CFG | CAP FG | I | MD | Capstan FG signal input. For capstan speed servo. Approx. 994 Hz when REC/PB (SP). |
| 69 | PE7/DAB0 | N.C. | O |  | N.C. |
| 70 | PE6/DAB0 | T/E LED ON | O | SS | Tape LED ON/OFF signal. 100 msec period "H" pulse when REC/PB. |
| 71 | PE5/DAA1 | N.C. | O |  | N.C. |
| 72 | PE4/DAA0 | N.C. | O |  |  |
| 73 | PE3/PWM1 | CAP PWM | O | SS | Capstan error signal output 20.15 μsec PWM signal. |
| 74 | PE2/PWM0 | DRUM PWM | O | SS | Drum error signal output 20.15 μsec PWM signal. |
| 75 | PE1/EC/INT2 | C FG | I | MD | Capstan FG signal input. For tape counter. |
| 76 | PE0/INT0 | $\overline{\text{S JACK IN}}$ |  |  | Not used, connected to +5V. |
| 77 | P17/ST1 | LANC IN | I | SS | Control L serial data input. |
| 78 | P16/SO1 | LANC OUT | O | SS | Control L serial data output. |
| 79 | P15/SCK1 | LM LIMIT DET | I | SS | Loading motor limiter ON detection signal. Normally "H", "L" when limiter ON. |
| 80 | P14/INT1 | AGC SLOW |  |  | Not used. |
| 81 | P13/TO | DRUM ON | O | SS | Drum driver ON/OFF control signal. "H" when drum ON. |
| 82 | P12/PWM | CLOG | O | SS | Head clog detection signal. "L" when no trouble. |
| 83 | P11/PO | REF PILOT | O | SS | ATF servo reference pilot signal. Synchronized when drum rotation to output by selecting four frequencies. f1=102.53 kHz, f2=118.95 kHz, f3=165.21 kHz and f4=148.69 kHz. |
| 84 | P10/PCK |  |  |  | Connected to +5V. |
| 85 | PK0 | 13/10 SW | I | MD | Not used. |
| 86 | VSS | VSS |  |  | GND |
| 87 | VDD | VDD |  |  | VDD |
| 88 | N.C. | (VPP) |  |  | Connected to +5V. |
| 89 | PA7/PP07 | DRUM ACC | O | SS | Drum motor acceleration signal. Not used. |

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 90 | PA6/PP06 | DRUM BRK | O | SS | Drum motor brake signal. Normally “L”. |
| 91 | PA5/PP05 | SP/$\overline{\text{LP}}$ | O | VA | SP/LP select signal. “L”: LP. |
| 92 | PA4/PP04 | AU IN/OUT | O |  | Not used. |
| 93 | PA3/PP03 | VIDEO O SW | O | VA | VIDEO OUT inhibit signal. “H”: inhibit. |
| 94 | PA2/PP02 | VIDEO I SW | O | VA | VIDEO IN/OUT select signal. Not used. |
| 95 | PA1/PP01 | VA PB MODE | O | ALL | Video/audio circuit REC/PB select signal. “H”: PB. |
| 96 | PA0/PP00 | VI SWP | O | VA | RF switching pulse signal for video circuit. 30 Hz, 50% duty pulse. |
| 97 | PB7/PP015 | RF SWP | O | ALL | RF switching pulse signal for REC/PB amp and Audio circuit. 30 Hz, 50% duty pulse. |
| 98 | 0 | H CHG | O | VA | Not used. |
| 99 | 11 | CAP ON | O | MD | Capstan driver ON/OFF control signal. “H” when capstan ON. |
| 100 | PB4/PP012 | CAP FWD/$\overline{\text{RVS}}$ | O | MD | Capstan rotating direction control signal. “H”: FWD, “L”: RVS. |

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 90 | PA6/PP06 | DRUM BRK | O | SS | Drum motor brake signal. Normally "L". |
| 91 | PA5/PP05 | SP/$\overline{LP}$ | O | VA | SP/LP select signal. "L": LP. |
| 92 | PA4/PP04 | AU IN/OUT | O |  | Not used. |
| 93 | PA3/PP03 | VIDEO O SW | O | VA | VIDEO OUT inhibit signal. "H": inhibit. |
| 94 | PA2/PP02 | VIDEO I SW | O | VA | VIDEO IN/OUT select signal. Not used. |
| 95 | PA1/PP01 | VA PB MODE | O | ALL | Video/audio circuit REC/PB select signal. "H": PB. |
| 96 | PA0/PP00 | VI SWP | O | VA | RF switching pulse signal for video circuit. 30 Hz, 50% duty pulse. |
| 97 | PB7/PP015 | RF SWP | O | ALL | RF switching pulse signal for REC/PB amp and Audio circuit. 30 Hz, 50% duty pulse. |
| 98 | 0 | H CHG | O | VA | Not used. |
| 99 | 11 | CAP ON | O | MD | Capstan driver ON/OFF control signal. "H" when capstan ON. |
| 100 | PB4/PP012 | CAP FWD/$\overline{RVS}$ | O | MD | Capstan rotating direction control signal. "H": FWD, "L": RVS. |

## 3-11. MODE CONTROL MICROPROCESSOR PIN FUNCTION (IC403 ON VS-95 BOARD: μPD75316)

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 1 | S12 | S12 | O |  | Segment terminal drive signal to LCD.<br>(Four value output of 0, 1.7, 3.3, 5V)<br>Not used. |
| 2 | S13 | S13 | O |  |  |
| 3 | S14 | S14 | O |  |  |
| 4 | S15 | S15 | O |  |  |
| 5 | S16 | S16 | O |  |  |
| 6 | S17 | S17 | O |  |  |
| 7 | S18 | S18 | O |  |  |
| 8 | S19 | S19 | O |  |  |
| 9 | S20 | S20 | O |  |  |
| 10 | S21 | S21 | O |  |  |
| 11 | S22 | S22 | O |  |  |
| 12 | S23 | S23 | O |  |  |
| 13 | S24/BP0 | $\overline{\text{EEPROM CS}}$ | O |  | Chip select signal to EEPROM (IC406 on VS-95 board). 1/2V period "L" pulse. |
| 14 | S25/BP1 | N.C | O |  | Not used. |
| 15 | S26/BP2 | TG STBY 1 | O | CAM | Power save control signal to timing generator (IC801 on VC-122 board). Normally "L". |
| 16 | S27/BP3 |  | O |  | N.C. |
| 17 | S28/BP4 | $\overline{\text{CS TITLE}}$ | O | CAM | Not used. |
| 18 | S29/BP5 | REMO CS | O |  | Chip select signal to sircs remote controller (IC907 on VS-95 board). 1V period "L" pulse. |
| 19 | S30/BP6 | S RAM CS | O |  | Not used. |
| 20 | S31/BP7 | $\overline{\text{CAM COSM CS}}$ | O | CAM | Chip select signal to camera controller (IC709 on VC-122 board). 1V period "L" pulse. |
| 21 | COM0 | COM 0 | O |  | Common terminal drive signal to LCD.<br>(Four value output of 0, 1.7, 3.3, 5V)<br>Not used. |
| 22 | COM1 | COM 1 | O |  |  |
| 23 | COM2 | COM 2 | O |  |  |
| 24 | COM3 | COM 3 | O |  |  |
| 25 | BIAS | BIAS | O |  | Bias voltage output for voltage deviding resistor. Not used. |
| 26 | VLC0 | VCC 0 | I |  | Power source 0 input<br>Power source for LCD dirve.<br>Not used. |
| 27 | VLC1 | VCC 1 | I |  | Power source 1 input |
| 28 | VLC2 | VCC 2 | I |  | Power source 2 input |
| 29 | P40 | K OUT 4 | O | all | KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases. |
| 30 | P41 | K OUT 5 | O | all |  |
| 31 | P42 | $\overline{\text{SYS RESET}}$ | O | all | Output signal to reset each IC when power is turned on. Normally "H". |
| 32 | P43 | $\overline{\text{TALLY}}$ | O | EVF | Tally LED ON/OFF signal. "L": ON. |
| 33 | VSS | VSS |  |  | GND |
| 34 | P50 | K OUT 0 | O | all | KEY matrix output.<br>1V period "L" pulse output when corresponding key is pressed. "L" when other cases. |
| 35 | P51 | K OUT 1 | O | all |  |
| 36 | P52 | K OUT 2 | O | all |  |
| 37 | P53 | K OUT 3 | O | all |  |
| 38 | P00/INT4 | $\overline{\text{BATT IN}}$ | I |  | Clock select to 32 kHz when "L" and to 4.19 MHz with "H" when Battery is turned on. "L" is select. |
| 39 | P01/$\overline{\text{SCK}}$ | $\overline{\text{SCK}}$ | O | all | Serial clock output terminal, Serial clock (2 μS) communication. |
| 40 | P02/SO/SB0 | DATA TO SLVE | O | all | Serial bus output terminal, Serial clock (2 μS) communication. |
| 41 | P03/SI/SB1 | DATA TO MSTR | I | all | Serial bus input terminal, Serial clock (2 μS) communication. |
| 42 | P10/INT0 | SYSTEM SYNC | I | all | (Edge detection vector interruption), System synchronization input port from CXP80624 (IC402 on VS-95 board). |

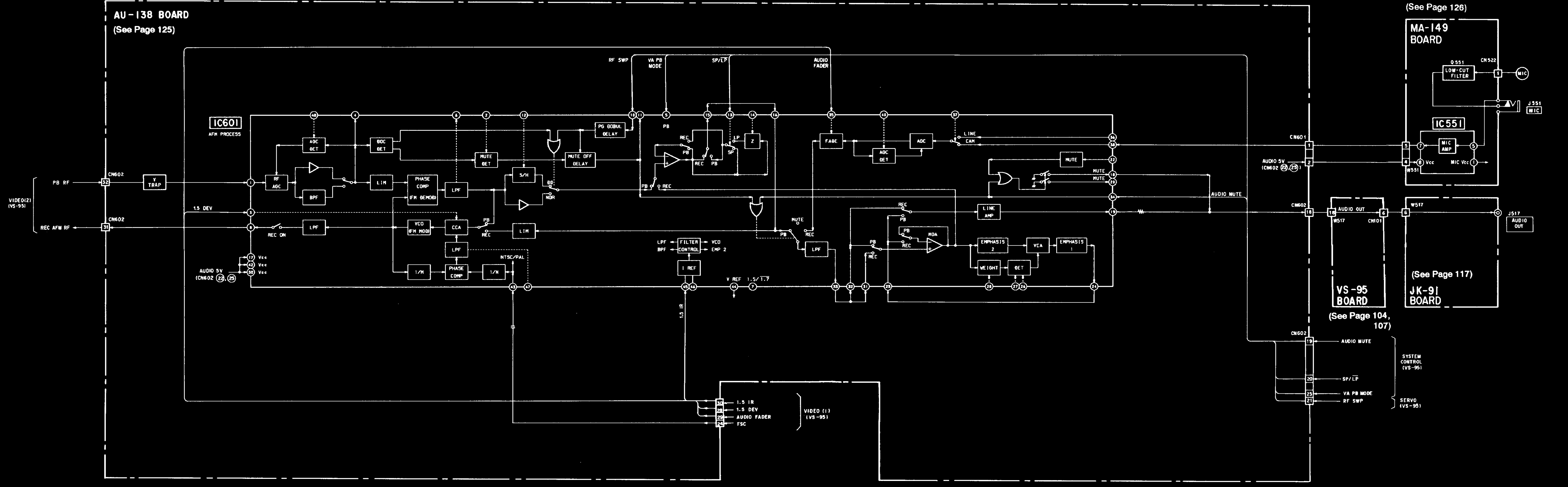
## 3-11. MODE CONTROL MICROPROCESSOR PIN FUNCTION (IC403 ON VS-95 BOARD: µPD75316)

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 1 | S12 | S12 | O | | Segment terminal drive signal to LCD.<br>(Four value output of 0, 1.7, 3.3, 5V)<br>Not used. |
| 2 | S13 | S13 | O | | |
| 3 | S14 | S14 | O | | |
| 4 | S15 | S15 | O | | |
| 5 | S16 | S16 | O | | |
| 6 | S17 | S17 | O | | |
| 7 | S18 | S18 | O | | |
| 8 | S19 | S19 | O | | |
| 9 | S20 | S20 | O | | |
| 10 | S21 | S21 | O | | |
| 11 | S22 | S22 | O | | |
| 12 | S23 | S23 | O | | |
| 13 | S24/BP0 | $\overline{\text{EEPROM CS}}$ | O | | Chip select signal to EEPROM (IC406 on VS-95 board). 1/2V period "L" pulse. |
| 14 | S25/BP1 | N.C | O | | Not used. |
| 15 | S26/BP2 | TO STBY 1 | O | CAM | Power save control signal to timing generator (IC801 on VC-122 board). Normally "L". |
| 16 | S27/BP3 | | O | | N.C. |
| 17 | S28/BP4 | $\overline{\text{CS TITLE}}$ | O | CAM | Not used. |
| 18 | S29/BP5 | REMO CS | O | | Chip select signal to sires remote controller (IC907 on VS-95 board). 1V period "L" pulse. |
| 19 | S30/BP6 | S RAM CS | O | | Not used. |
| 20 | S31/BP7 | $\overline{\text{CAM COSM CS}}$ | O | CAM | Chip select signal to camera controller (IC709 on VC-122 board). 1V period "L" pulse. |
| 21 | COM0 | COM 0 | O | | Common terminal drive signal to LCD.<br>(Four value output of 0, 1.7, 3.3, 5V)<br>Not used. |
| 22 | COM1 | COM 1 | O | | |
| 23 | COM2 | COM 2 | O | | |
| 24 | COM3 | COM 3 | O | | |
| 25 | BIAS | BIAS | O | | Bias voltage output for voltage dividing resistor. Not used. |
| 26 | VLC0 | VCC 0 | I | | Power source 0 input<br>Power source for LCD drive.<br>Not used. |
| 27 | VLC1 | VCC 1 | I | | Power source 1 input |
| 28 | VLC2 | VCC 2 | I | | Power source 2 input |
| 29 | P40 | K OUT 4 | O | all | KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases. |
| 30 | P41 | K OUT 5 | O | all | |
| 31 | P42 | $\overline{\text{SYS RESET}}$ | O | all | Output signal to reset each IC when power is turned on. Normally "H". |
| 32 | P43 | $\overline{\text{TALLY}}$ | O | EVF | Tally LED ON/OFF signal. "L": ON. |
| 33 | VSS | VSS | | | GND |
| 34 | P50 | K OUT 0 | O | all | KEY matrix output.<br>1V period "L" pulse output when corresponding key is pressed. "L" when other cases. |
| 35 | P51 | K OUT 1 | O | all | |
| 36 | P52 | K OUT 2 | O | all | |
| 37 | P53 | K OUT 3 | O | all | |
| 38 | P00/INT4 | $\overline{\text{BATT IN}}$ | I | | Clock select to 32 kHz when "L" and to 4.19 MHz with "H" when Battery is turned on. "L" is select. |
| 39 | P01/$\overline{\text{SCK}}$ | $\overline{\text{SCK}}$ | O | all | Serial clock output terminal, Serial clock (2 µS) communication. |
| 40 | P02/SO/SB0 | DATA TO SLVE | O | all | Serial bus output terminal, Serial clock (2 µS) communication. |
| 41 | P03/SI/SB1 | DATA TO MSTR | I | all | Serial bus input terminal, Serial clock (2 µS) communication. |
| 42 | P10/INT0 | SYSTEM SYNC | I | all | (Edge detection vector interruption), System synchronization input port from CXP80424 (IC402 on VS-95 board). |

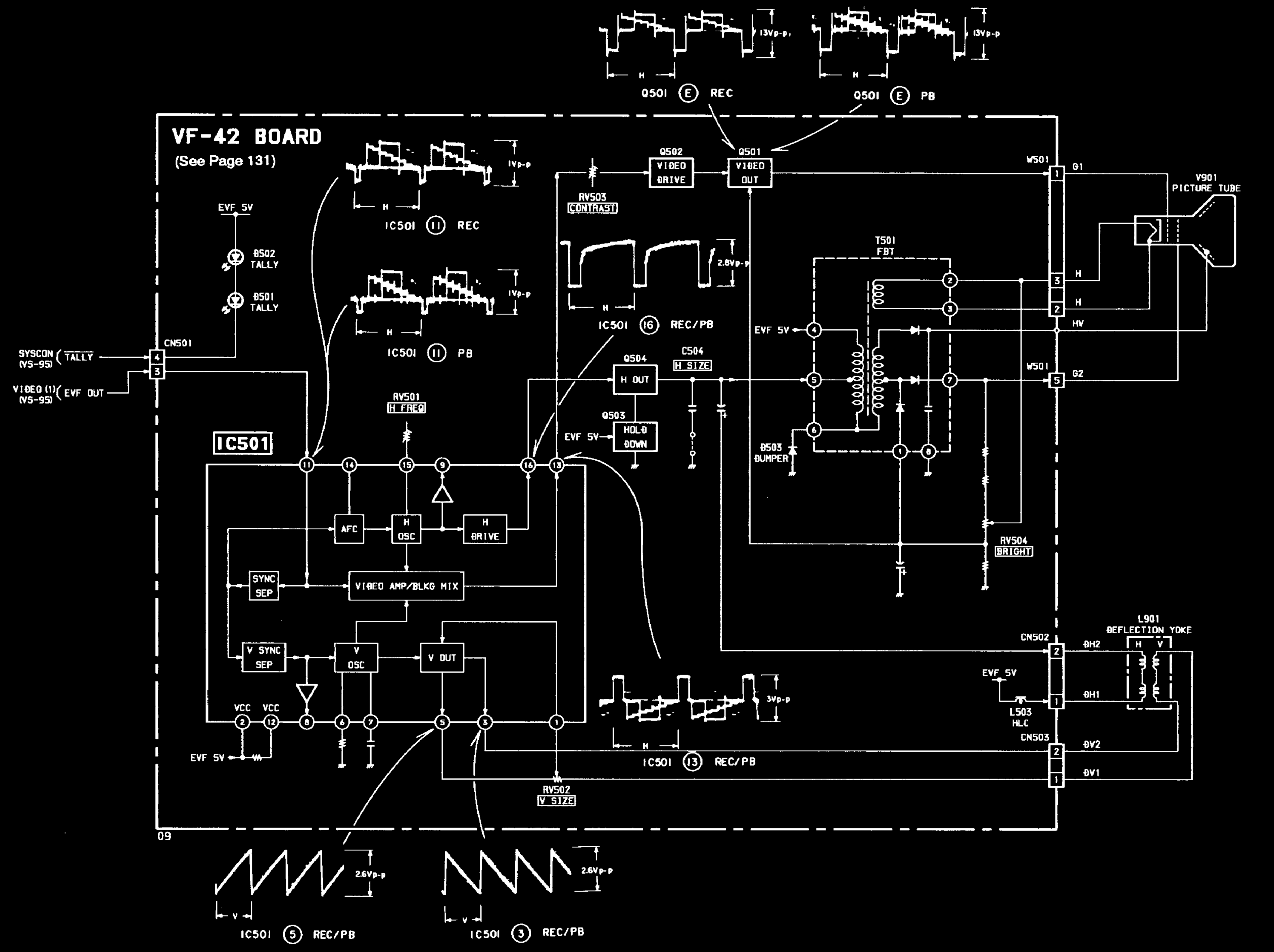
| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 43 | P11/INT1 | $\overline{\text{LI PRE END}}$ | I | | (Edge detection vector interruption), Lithium PRE END is selected with "L". |
| 44 | P12/INT2 | $\overline{\text{LANC PWR ON}}$ | I | | Power on signal input from wired remote control. "L" when power switch pressed. |
| 45 | P13/TIO | TITLE BUSY | I | CAM | Not used. |
| 46 | P20/PT00 | VTR DD ON | O | PS | VTR power source (VIDEO 5V, RP 5V, AUDIO 5V, EVF 5V, D5V, (SS5V), D4V, CORE 4V) control signal. "H" when power switch is in "PLAYER" or "CAMERA" position. |
| 47 | P21 | CAM DD ON | O | PS | CAMERA power source (CAM 5V, +15V, –9V) control signal. "H" when power switch is in "CAMERA" position. |
| 48 | P22/PCL | $\overline{\text{VIDEO D/A CS}}$ | O | VA | Serial data load signal to video circuit EVR (IC156, 158 on VS-95 board). 1V period "H" pulse. |
| 49 | P23/BUZ | BEEP | O | | Buzzer output. Normally "L". 2 kHz pulse: alarm. |
| 50 | P30/LCDCL | $\overline{\text{VIDEO CS}}$ | O | VA | Chip select signal to Y process IC (IC151 on VS-95 board). 1V period "L" pulse. |
| 51 | P31/SYNC | $\overline{\text{VTR COSM CS}}$ | O | | Chip select signal to mechanism controller (IC402 on VS-95 board). 1V period "L" pulse. |
| 52 | P32 | $\overline{\text{SG CS}}$ | O | CAM | Chip select signal to sync generator (IC704 on VC-122 board). 1V period "L" pulse. |
| 53 | P33 | $\overline{\text{CRTC CS}}$ | O | CAM | Strobe signal for character generator (IC406 on VS-95 board). 1V period "H" pulse. |
| 54 | VDD | VDD | | | VDD |
| 55 | XT1 | XT1 | I | | SUB system clock.<br>32 kHz oscillation terminal. |
| 56 | XT2 | XT2 | | | |
| 57 | N.C. | N.C. | | | N.C. |
| 58 | X1 | X1 | I | | Main system clock.<br>4.19 MHz oscillation terminal. |
| 59 | X2 | X2 | I | | |
| 60 | P60/KK0 | K IN 0 | I | all | KEY matrix input.<br>1V period "L" pulse input when corresponding key is pressed. "H" when other case. |
| 61 | P61/KR1 | K IN 1 | I | all | |
| 62 | P62/KR2 | K IN 2 | I | all | |
| 63 | P63/KR3 | K IN 3 | I | all | |
| 64 | P70/KR4 | K IN 4 | I | all | |
| 65 | P71/KP5 | K IN 5 | I | all | |
| 66 | P72/KP6 | K IN 6 | I | all | |
| 67 | P73/KP7 | $\overline{\text{CC DOWN}}$ | I | MD | Cassette compartment lock switch input. "L": Lock. |
| 68 | $\overline{\text{RESET}}$ | $\overline{\text{RESET}}$ | I | | System reset input. "L": Reset, Normally: "H". |
| 69 | S0 | CLK CHK | O | | N.C. |
| 70 | S1 | S1 | O | | Segment terminal drive signal to LCD.<br>(Four value output of 0, 1.7, 3.3, 5V)<br>Not used. |
| 71 | S2 | S2 | O | | |
| 72 | S3 | S3 | O | | |
| 73 | S4 | S4 | O | | |
| 74 | S5 | S5 | O | | |
| 75 | S6 | S6 | O | | |
| 76 | S7 | S7 | O | | |
| 77 | S8 | S8 | O | | |
| 78 | S9 | S9 | O | | |
| 79 | S10 | S10 | O | | |
| 80 | S11 | S11 | O | | |

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 43 | P11/INT1 | $\overline{\text{LI PRE END}}$ | I |  | (Edge detection vector interruption), Lithium PRE END is selected with "L". |
| 44 | P12/INT2 | $\overline{\text{LANC PWR ON}}$ | I |  | Power on signal input from wired remote control. "L" when power switch pressed. |
| 45 | P13/TI0 | TITLE BUSY | I | CAM | Not used. |
| 46 | P20/PT00 | VTR DD ON | O | PS | VTR power source (VIDEO 5V, RP 5V, AUDIO 5V, EVF 5V, D5V, (SS5V), D4V, CORE 4V) control signal. "H" when power switch is in "PLAYER" or "CAMERA" position. |
| 47 | P21 | CAM DD ON | O | PS | CAMERA power source (CAM 5V, +15V, –9V) control signal. "H" when power switch is in "CAMERA" position. |
| 48 | P22/PCL | $\overline{\text{VIDEO D/A CS}}$ | O | VA | Serial data load signal to video circuit EVR (IC156, 158 on VS-95 board). 1V period "H" pulse. |
| 49 | P23/BUZ | BEEP | O |  | Buzzer output. Normally "L". 2 kHz pulse: alarm. |
| 50 | P30/LCDCL | $\overline{\text{VIDEO CS}}$ | O | VA | Chip select signal to Y process IC (IC151 on VS-95 board). 1V period "L" pulse. |
| 51 | P31/SYNC | $\overline{\text{VTR COSM CS}}$ | O |  | Chip select signal to mechanism controller (IC402 on VS-95 board). 1V period "L" pulse. |
| 52 | P32 | $\overline{\text{SG CS}}$ | O | CAM | Chip select signal to sync generator (IC704 on VC-122 board). 1V period "L" pulse. |
| 53 | P33 | $\overline{\text{CRTC CS}}$ | O | CAM | Strobe signal for character generator (IC406 on VS-95 board). 1V period "H" pulse. |
| 54 | VDD | VDD |  |  | VDD |
| 55 | XT1 | XT1 | I |  | SUB system clock.<br>32 kHz oscillation terminal. |
| 56 | XT2 | XT2 |  |  |  |
| 57 | N.C. | N.C. |  |  | N.C. |
| 58 | X1 | X1 | I |  | Main system clock.<br>4.19 MHz oscillation terminal. |
| 59 | X2 | X2 | I |  |  |
| 60 | P60/KR0 | K IN 0 | I | all | KEY matrix input.<br>1V period "L" pulse input when corresponding key is pressed. "H" when other case. |
| 61 | P61/KR1 | K IN 1 | I | all |  |
| 62 | P62/KR2 | K IN 2 | I | all |  |
| 63 | P63/KR3 | K IN 3 | I | all |  |
| 64 | P70/KR4 | K IN 4 | I | all |  |
| 65 | P71/KR5 | K IN 5 | I | all |  |
| 66 | P72/KR6 | K IN 6 | I | all |  |
| 67 | P73/KP7 | $\overline{\text{CC DOWN}}$ | I | MD | Cassette compartment lock switch input. "L": Lock. |
| 68 | $\overline{\text{RESET}}$ | $\overline{\text{RESET}}$ | I |  | System reset input. "L": Reset, Normally: "H". |
| 69 | S0 | CLK CHK | O |  | N.C. |
| 70 | S1 | S1 | O |  | Segment terminal drive signal to LCD.<br>(Four value output of 0, 1.7, 3.3, 5V)<br>Not used. |
| 71 | S2 | S2 | O |  |  |
| 72 | S3 | S3 | O |  |  |
| 73 | S4 | S4 | O |  |  |
| 74 | S5 | S5 | O |  |  |
| 75 | S6 | S6 | O |  |  |
| 76 | S7 | S7 | O |  |  |
| 77 | S8 | S8 | O |  |  |
| 78 | S9 | S9 | O |  |  |
| 79 | S10 | S10 | O |  |  |
| 80 | S11 | S11 | O |  |  |

## 3-13. AUDIO BLOCK DIAGRAM


AU-138 BOARD
(See Page 125)
IC601
AFM PROCESS
VIDEO(2) (VS-95)
PB RF
REC AFM RF
CN602
Y TRAP
RF AGC
AGC DET
BPF
DOC DET
LIM
PHASE COMP (FM DEMOD)
LPF
MUTE DET
S/H
NOR
MUTE OFF DELAY
PG DOBUL DELAY
1.5 DEV
REC ON
VCO (FM MOD)
CCA
1/M
1/N
NTSC/PAL
AUDIO 5V (CN602 22, 25)
Vcc
RF SWP
VA PB MODE
SP/LP
AUDIO FADER
PB
REC
SP
LP
Z
FADE
AGC
LINE
CAM
MUTE
AUDIO MUTE
LINE AMP
MOA
EMPHASIS 2
VCA
EMPHASIS 1
WEIGHT
DET
FILTER CONTROL
VCO
EMP 2
I REF
V REF
1.5/1.7
1.5 IR
1.5 IR
1.5 DEV
AUDIO FADER
FSC
VIDEO (1) (VS-95)
CN601
AUDIO 5V (CN602 22, 25)
(See Page 126)
MA-149 BOARD
Q551
LOW-CUT FILTER
CN522
MIC
J551
MIC
IC551
MIC AMP
Vcc
MIC Vcc
W551
AUDIO OUT
W517
CN101
J517
AUDIO OUT
VS-95 BOARD
(See Page 104, 107)
(See Page 117)
JK-91 BOARD
AUDIO MUTE
SP/LP
VA PB MODE
RF SWP
SYSTEM CONTROL (VS-95)
SERVO (VS-95)

## 3-14. EVF BLOCK DIAGRAM

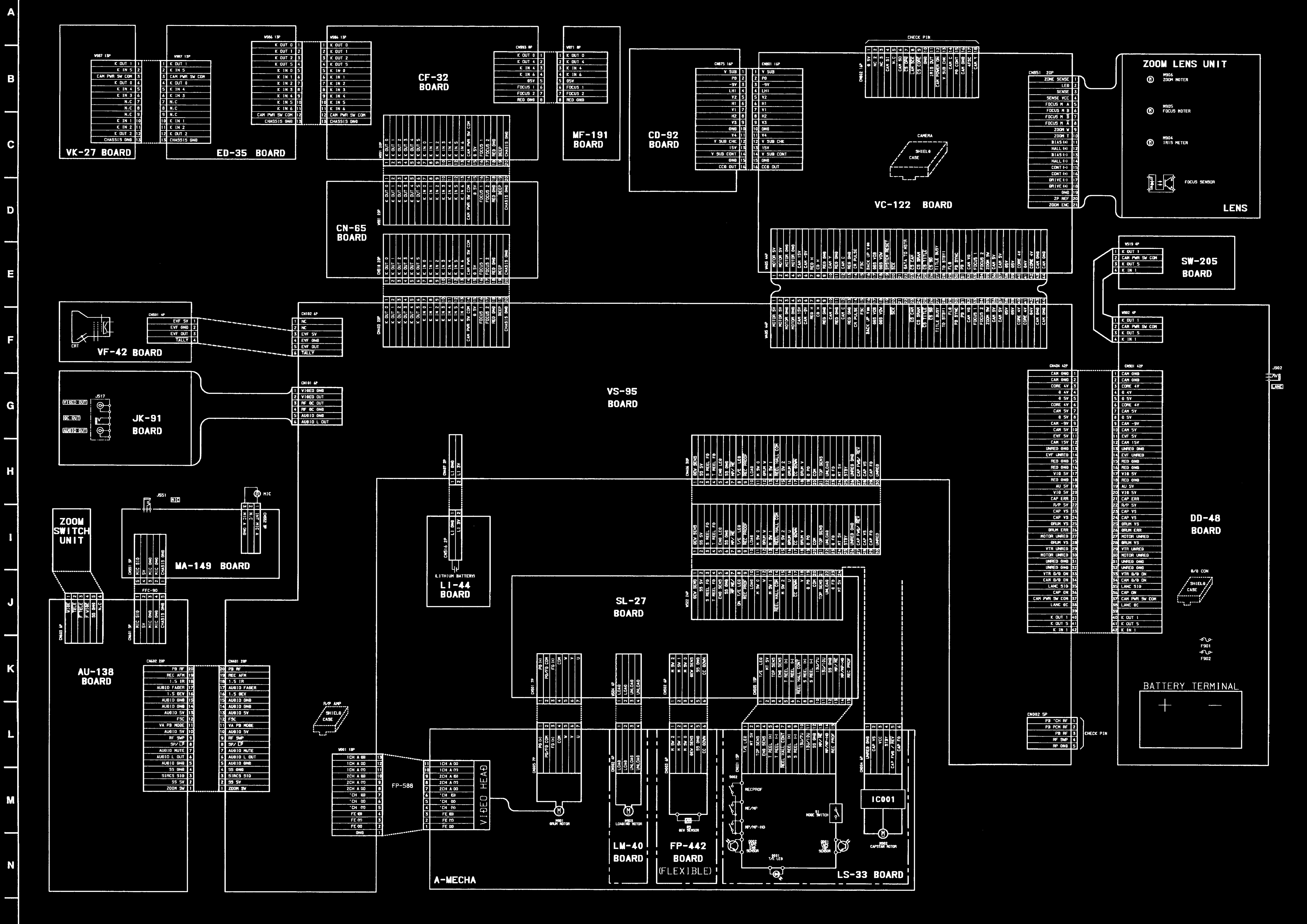

13Vp-p
H
Q501 E REC
Q501 E PB
VF-42 BOARD
(See Page 131)
1Vp-p
IC501 11 REC
IC501 11 PB
EVF 5V
D502 TALLY
D501 TALLY
SYSCON (VS-95)
TALLY
VIDEO (1) (VS-95)
EVF OUT
CN501
RV503 CONTRAST
Q502 VIDEO DRIVE
Q501 VIDEO OUT
2.8Vp-p
IC501 16 REC/PB
Q504 H OUT
C504 H SIZE
Q503 HOLD DOWN
RV501 H FREQ
IC501
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
T501 FBT
D503 DUMPER
RV504 BRIGHT
W501
G1
G2
HV
V901 PICTURE TUBE
L901 DEFLECTION YOKE
CN502
CN503
DH2
DH1
DV2
DV1
L503 HLC
3Vp-p
IC501 13 REC/PB
RV502 V SIZE
09
2.6Vp-p
V
IC501 5 REC/PB
IC501 3 REC/PB

## 3-15. POWER BLOCK DIAGRAM

(See Page 137)
SW-205 BOARD
(See Page 118)
MECHA CHASSIS
IC001
CAPSTAN MOTOR DRIVE
(See Page 119)
SL-27 BOARD
IC521
DD-48 BOARD
(See Page 137)
J901 BATTERY TERMINAL
IC901 DC/DC CONVERTER/ A7( CAPSTAN,DRUM PWM DRIVE
CAPSTAN/DRUM PWM DRIVE (SERVO)
J902 REMOTE
LANC SIG
LANC DC
IC405 EEP ROM
IC406 CHARACTER GENERATOR
IC408 DRUM MOTOR DRIVE
IC404 ATF SERVO
IC410 LOADING MOTOR DRIVE
IC402 SERVO/ MECHA CONTROL
IC407 SIRCS CONTROL
IC401
IC409 LANC I/O
IC403 MODE CONTROL
VS-95 BOARD
(See Page 100, 104, 107)
IC001
IC003
IC151
IC152
IC154
IC156
IC158
IC159
JK-91 BOARD
(See Page 117)
AU-138 BOARD
IC601
IC602
(See Page 125)
MA-149 BOARD
IC551
(See Page 126)
(See Page 131)
ELECTRIC VIEW FINDER
IC501
VF-42 BOARD
(See Page 115)
CN-65 BOARD
(See Page 115)
CF-32 BOARD
(See Page 116)
MF-191 BOARD
ED-35 BOARD
(See Page 116)
(See Page 117)
VK-27 BOARD
LI-44 BOARD
(See Page 117)
LITHIUM BATTERY
VC-122 BOARD
(See Page 85, 88, 92)
(See Page 79)
CD-92 BOARD
IC875
IC804
IC801
IC805
IC803
IC802
IC706
IC702
IC704
IC705
IC707
IC709
IC712
IC851
IC852
IC856
IC853
IC854
(See Page 94)
LENS BLOCK

## SECTION 4
## PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

### 4-1. FRAME SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
VK-27 BOARD
ED-35 BOARD
CF-32 BOARD
MF-191 BOARD
CD-92 BOARD
CHECK PIN
VC-122 BOARD
ZOOM LENS UNIT
M906 ZOOM MOTER
M905 FOCUS MOTER
M904 IRIS METER
FOCUS SENSOR
LENS
CN-65 BOARD
SW-205 BOARD
VF-42 BOARD
CRT
JK-91 BOARD
VIDEO OUT
RF DC OUT
AUDIO OUT
VS-95 BOARD
ZOOM SWITCH UNIT
MIC
MA-149 BOARD
LITHIUM BATTERY
LI-44 BOARD
SL-27 BOARD
DD-48 BOARD
AU-138 BOARD
R/P AMP SHIELD CASE
FP-588
VIDEO HEAD
DRUM MOTOR
LOADING MOTOR
LM-40 BOARD
FP-442 BOARD (FLEXIBLE)
LS-33 BOARD
IC001
CAPSTAN MOTOR
A-MECHA
CHECK PIN
BATTERY TERMINAL
+
—
F901
F902

## 4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

**THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.**
**(In addition to this , the necessary note is printed in each block.)**

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.

  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ● : Through hole.

| * Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

- **For schematic diagrams.**
- Caution when replacing chip parts.

  New parts must be attached after removal of chip.

  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.

  Chip resistor are 1/10W unless otherwise noted.

  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.

  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.*
- —— : B+ Line.*
- - - - : B– Line.*
- ⇨ : IN/OUT direction of (+, – ) B LINE.*
- Circled numbers refer to waveforms.*

| Note: | Note: |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

When indicating parts by reference number, please include the board name.

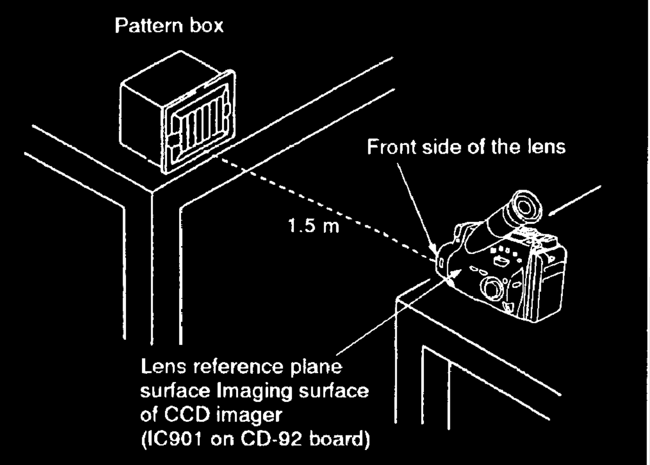
*: indicated by the color red.

**• Measuring conditions voltage value and waveform.**
**(CAMERA, DIGITAL TITLE block)**

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.*

  Readings are taken with a digital multimeter (DC 10MΩ ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
Front side of the lens
1.5 m
Lens reference plane surface Imaging surface of CCD imager (IC901 on CD-92 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

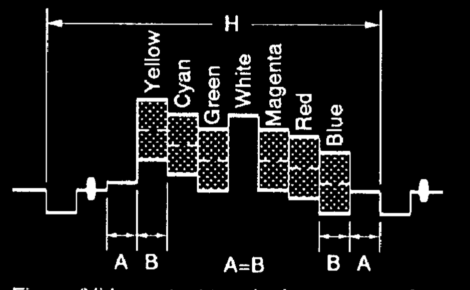

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform)

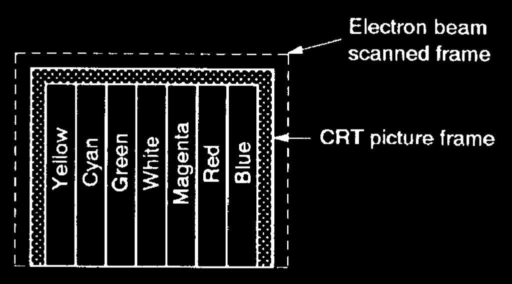

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. (Picture on monitor TV)

**(VIDEO, SERVO/SYSTEM CONTROL, LCD CONTROL, VIEW FINDER block)**

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ ).*
- Voltage variations may be noted due to normal production tolerances.*

## CD-92 (CCD IMAGER) PRINTED WIRING BOARD

— Ref. No. CD-92 BOARD: 1000 series —

- **For printed wiring boards.**
- CD-92 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

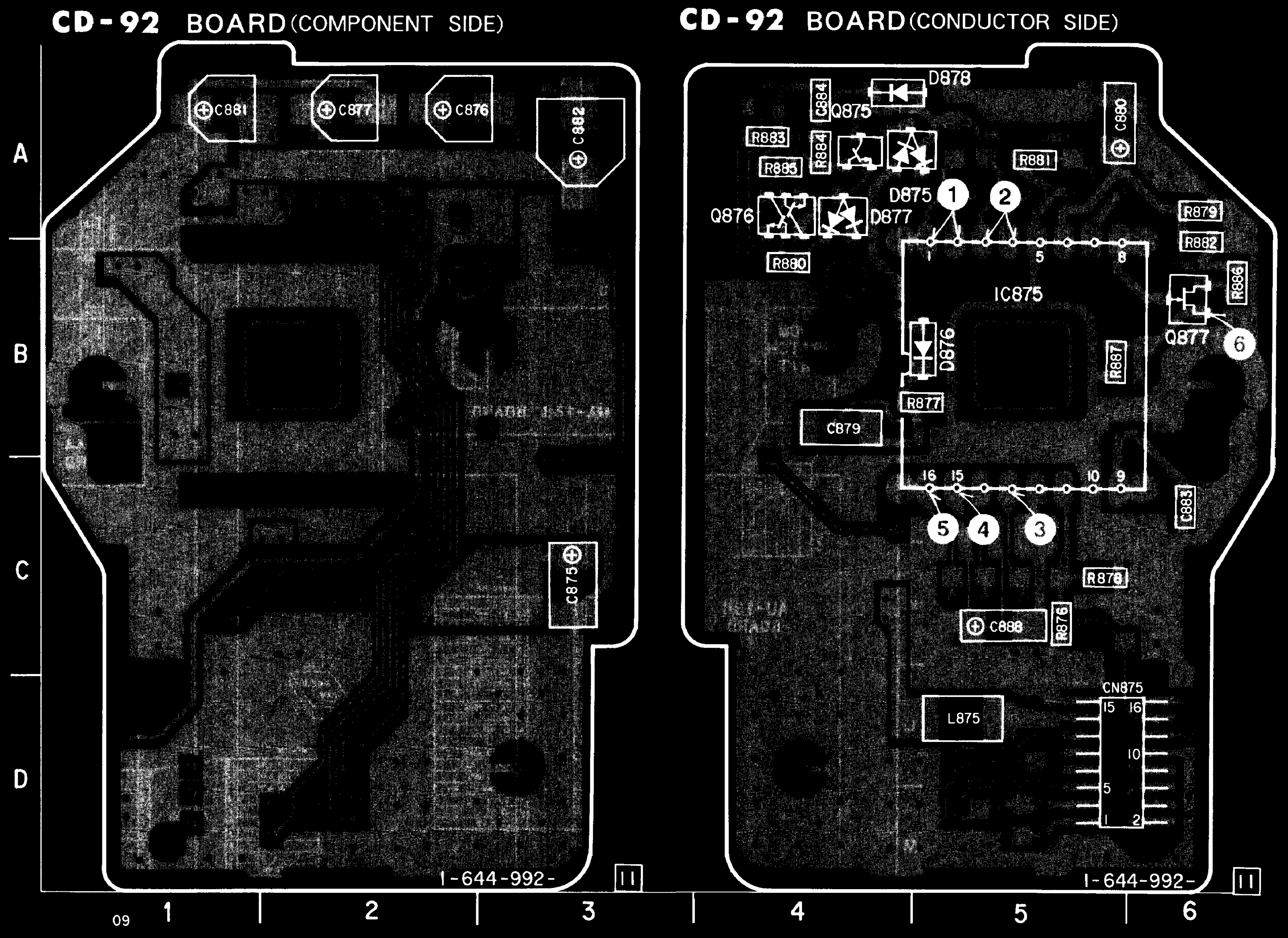
| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

⟨ DIODE ⟩

| | | | |
|---|---|---|---|
| D875 | 8-719-800-76 | DIODE | 1SS226 |
| D876 | 8-719-404-46 | DIODE | MA110 |
| D877 | 8-719-820-05 | DIODE | 1SS181 |
| D878 | 8-719-404-46 | DIODE | MA110 |

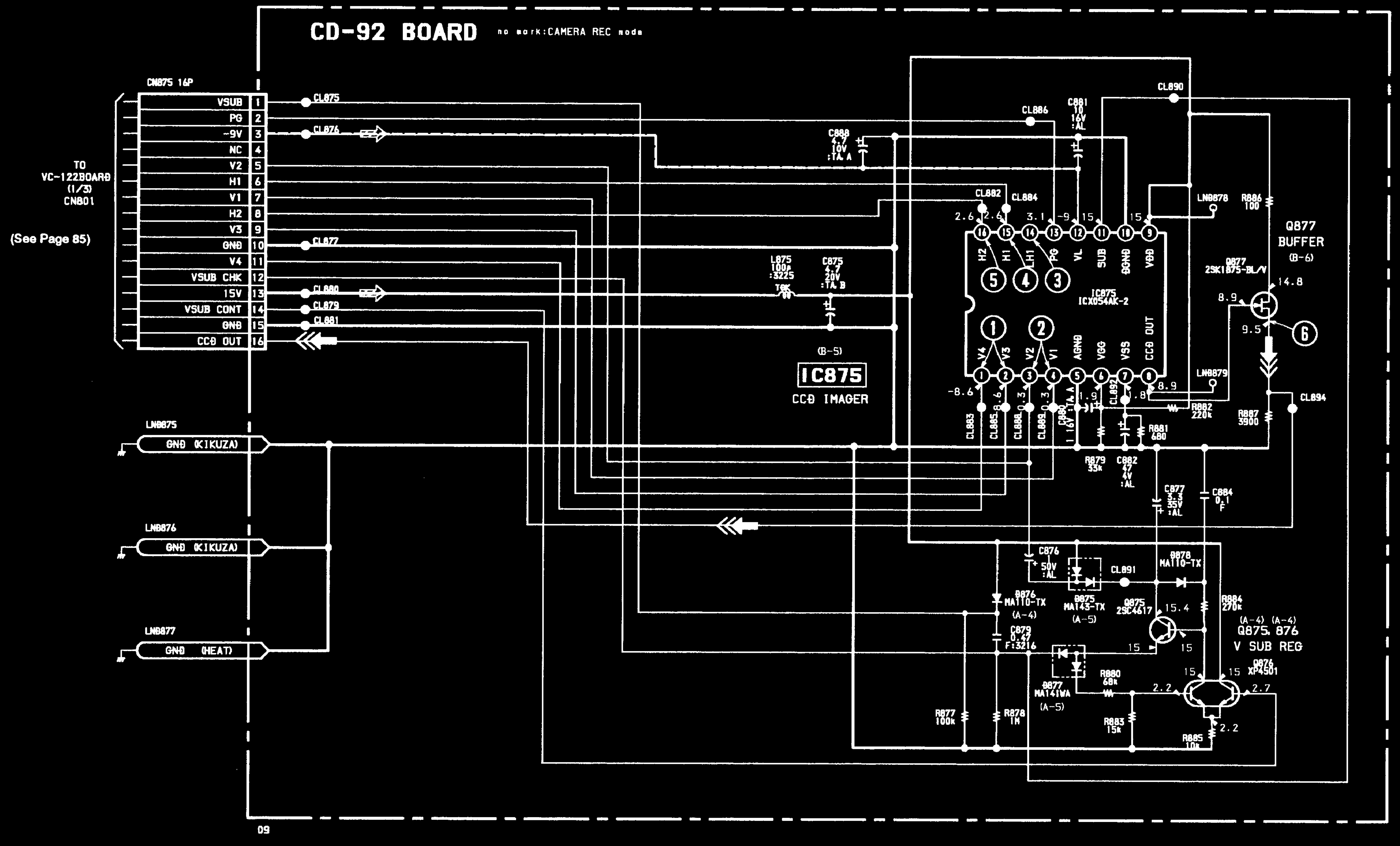
⟨ TRANSISTOR ⟩

| | | | |
|---|---|---|---|
| Q875 | 8-729-425-64 | TRANSISTOR | 2SD2216Q |
| Q876 | 8-729-427-72 | TRANSISTOR | XP4501 |
| Q877 | 8-729-232-86 | TRANSISTOR | 2SK1875 |


CD-92 BOARD (COMPONENT SIDE)
CD-92 BOARD (CONDUCTOR SIDE)
A
B
C
D
C881
C877
C876
C882
C875
1-644-992-
11
D878
C884
Q875
R883
R885
R884
R881
C880
D875
D877
Q876
R879
R882
R880
IC875
R886
Q877
D876
R887
R877
C879
C883
R878
C888
R876
CN875
L875
1-644-992-
11
09
1
2
3
4
5
6

## CD-92 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-92 BOARD: 1000 series —

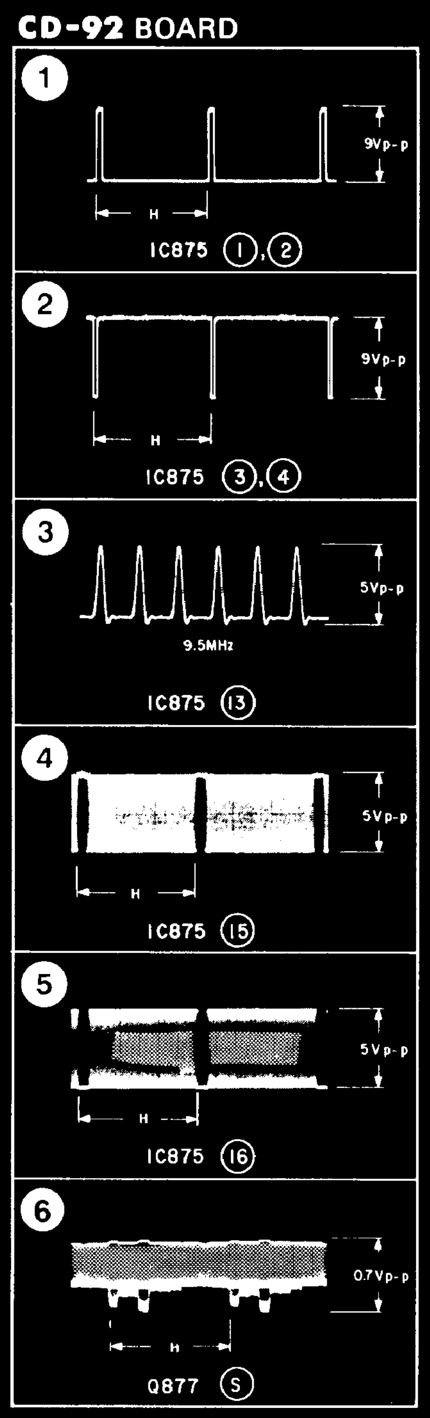

CD-92 BOARD
no mark:CAMERA REC mode
TO VC-122BOARD (1/3) CN801
(See Page 85)
CN875 16P
VSUB 1
PG 2
-9V 3
NC 4
V2 5
H1 6
V1 7
H2 8
V3 9
GND 10
V4 11
VSUB CHK 12
15V 13
VSUB CONT 14
GND 15
CCD OUT 16
CL875
CL876
CL877
CL880
CL879
CL881
LN8875 GND (KIKUZA)
LN8876 GND (KIKUZA)
LN8877 GND (HEAT)
C888 4.7 10V :TA A
L875 100µ :3225
C875 4.7 20V :TA B
(B-5)
IC875
CCD IMAGER
IC875 ICX054AK-2
H2 H1 LH1 PG VL SUB DGND VDD
V4 V3 V2 V1 AGND VGG VSS CCD OUT
CL882 CL884 CL886 CL890
C881 10 16V :AL
2.6 2.6 3.1 -9 15 15
-8.6 -8.6 0.3 0.3 1.9 1.8 8.9
CL883 CL885 CL888 CL889 CL892
C880 1 16V :TA A
R879 33k
C882 47 4V :AL
R881 680
R882 220k
LN8878 LN8879
R886 100
Q877 BUFFER (B-6)
Q877 2SK1875-BL/V
14.8 8.9 9.5
R887 3900
CL894
C877 3.3 35V :AL
C884 0.1 F
C876 50V :AL
CL891
D878 MA110-TX
D876 MA110-TX (A-4)
D875 MA143-TX (A-5)
Q875 2SC4617
15.4 15 15
R884 270k
(A-4) (A-4) Q875, 876 V SUB REG
C879 0.47 F:3216
D877 MA141WA (A-5)
R880 68k
Q876 XP4501
15 15 2.2 2.7 2.2
R883 15k
R885 10k
R877 100k
R878 1M
09

**Note on the CCD imager replacement**

- Some of this units require the correction data by the CCD imager (IC901 on CD-92 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-122 board), and also written on the CCD data label put on the shield case (upper) of the DD-48 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-92 board supplied as the repair parts.
  When replacing the CD-92 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | ➡》 | |
| PB | | | | |



### Note on the CCD imager replacement

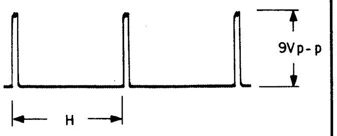
- Some of this units require the correction data by the CCD imager (IC901 on CD-92 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-122 board), and also written on the CCD data label put on the shield case (upper) of the DD-48 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-92 board supplied as the repair parts.
  When replacing the CD-92 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | ➡» | |
| PB | | | | |

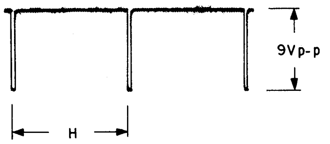
## CD-92 BOARD

❶



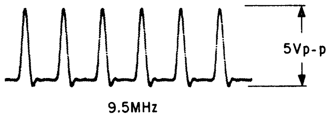
IC875 ①,②

❷



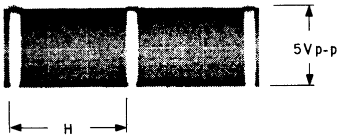
IC875 ③,④

❸



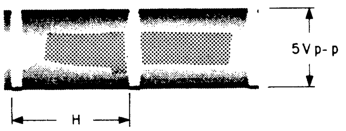
IC875 ⑬

❹



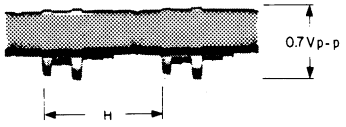
IC875 ⑮

❺



IC875 ⑯

❻



Q877 Ⓢ

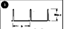
**Note on the CCD Imager replacement**

- Some of this units require the correction data by the CCD imager (IC901 on CD-92 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-122 board), and also written on the CCD data label put on the shield case (upper) of the DD-48 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-92 board supplied as the repair parts.
  When replacing the CD-92 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

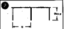
- SIGNAL PATH

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | ⇒ | |
| PB | | | | |

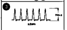
## CD-92 BOARD



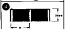
IC875 ①,②



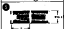
IC875 ③,④



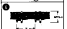
IC875 ⑬



IC875 ⑱



IC875 ⑱



Q877 ⑤

## VC-122 (CAMERA, LENS DRIVE) PRINTED WIRING BOARD

— Ref. No. VC-122 BOARD: 3000 series —

- **For printed wiring boards.**
- VC-122 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

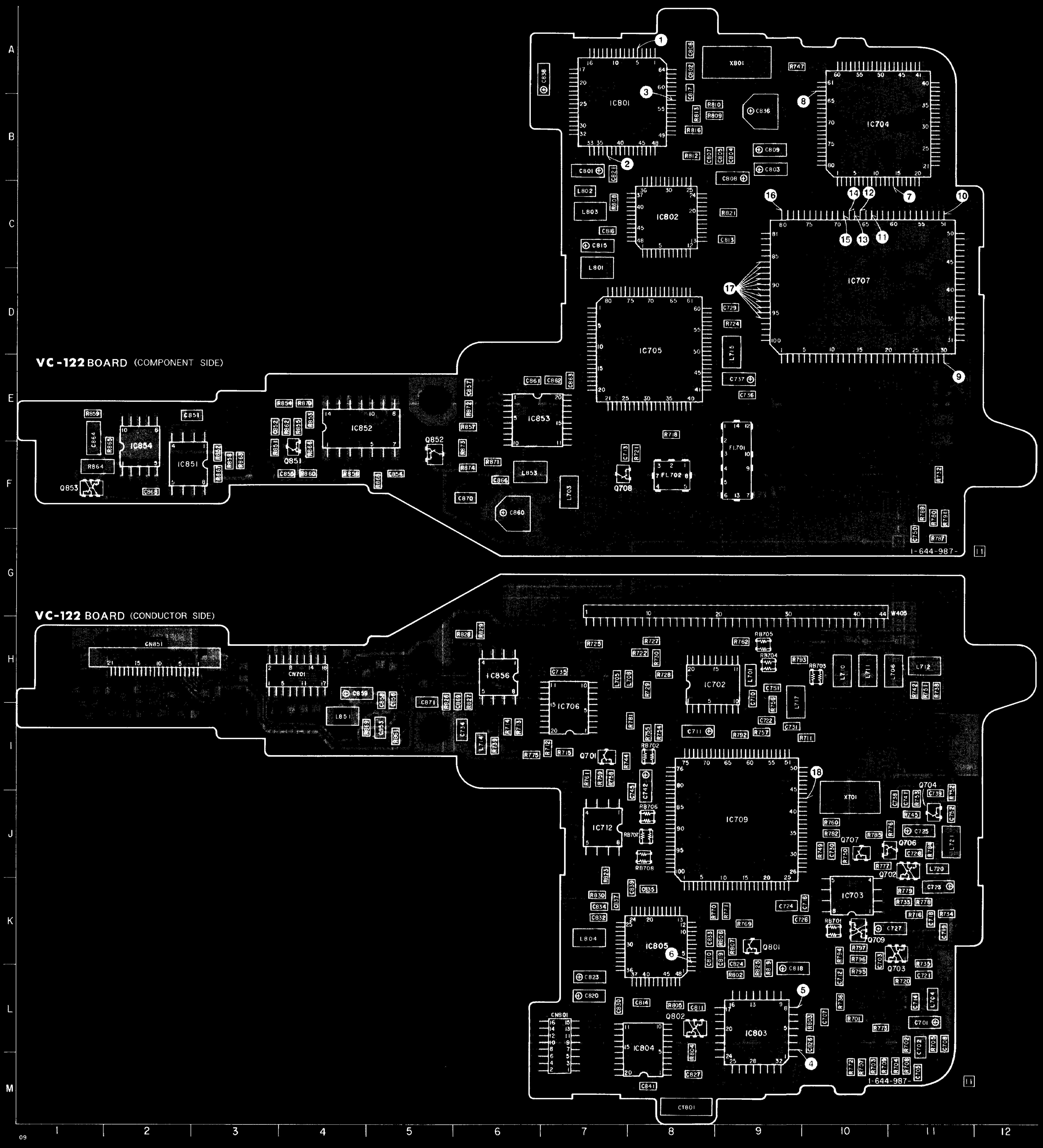
| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

〈 IC 〉

| | | | |
|---|---|---|---|
| IC702 | 8-759-064-36 | IC | MB88346BPFV-EF |
| IC703 | 8-759-710-07 | IC | NJM2234M |
| IC704 | 8-752-348-92 | IC | CXD2101AR |
| IC705 | 8-759-063-18 | IC | CXD2103AR |
| IC706 | 8-752-355-56 | IC | CXD2104BN |
| IC707 | 8-752-344-53 | IC | CXD2100Q |
| IC709 | 8-752-839-80 | IC | CXP80624-424R |
| IC712 | 8-759-073-67 | IC | BR9021AF |
| IC801 | 8-752-350-16 | IC | CXD1257AR |
| IC802 | 8-752-056-39 | IC | CXA1507BR |
| IC803 | 8-752-053-26 | IC | CXA1399Q |
| IC804 | 8-752-327-48 | IC | CXD1250N |
| IC805 | 8-752-054-61 | IC | CXA1390AR |
| IC851 | 8-759-701-24 | IC | NJM3414M-TE1 |
| IC852 | 8-759-998-96 | IC | LM324D |
| IC853 | 8-759-058-47 | IC | MPC1724VMEL |
| IC854 | 8-759-823-51 | IC | LB1830M |
| IC856 | 8-759-998-98 | IC | LM358D |

〈 TRANSISTOR 〉

| | | | |
|---|---|---|---|
| Q701 | 8-729-928-87 | TRANSISTOR | DTC124EE |
| Q702 | 8-729-427-74 | TRANSISTOR | XP4601 |
| Q703 | 8-729-427-74 | TRANSISTOR | XP4601 |
| Q704 | 8-729-425-50 | TRANSISTOR | 2SB1462Q |
| Q706 | 8-729-425-64 | TRANSISTOR | 2SD2216Q |
| Q707 | 8-729-428-84 | TRANSISTOR | UN9111 |
| Q708 | 8-729-425-64 | TRANSISTOR | 2SD2216Q |
| Q709 | 8-729-427-72 | TRANSISTOR | XP4501 |
| Q801 | 8-729-425-64 | TRANSISTOR | 2SD2216Q |
| Q802 | 8-729-427-70 | TRANSISTOR | XP4401 |
| Q851 | 8-729-425-64 | TRANSISTOR | 2SD2216Q |
| Q852 | 8-729-013-88 | TRANSISTOR | RN1302 |
| Q853 | 8-729-427-70 | TRANSISTOR | XP4401 |


VC-122 BOARD (COMPONENT SIDE)
VC-122 BOARD (CONDUCTOR SIDE)
A
B
C
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I
J
K
L
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IC801
IC802
IC704
IC707
IC705
IC853
IC852
IC851
IC854
IC856
IC702
IC706
IC709
IC712
IC703
IC805
IC804
IC803
X801
X701
CN851
CN701
CN801
CT801
W405
Q851
Q852
Q853
Q708
Q701
Q704
Q706
Q707
Q702
Q709
Q703
Q801
Q802
FL701
FL702
1-644-987-
11

## VC-122 (CAMERA) SCHEMATIC DIAGRAM

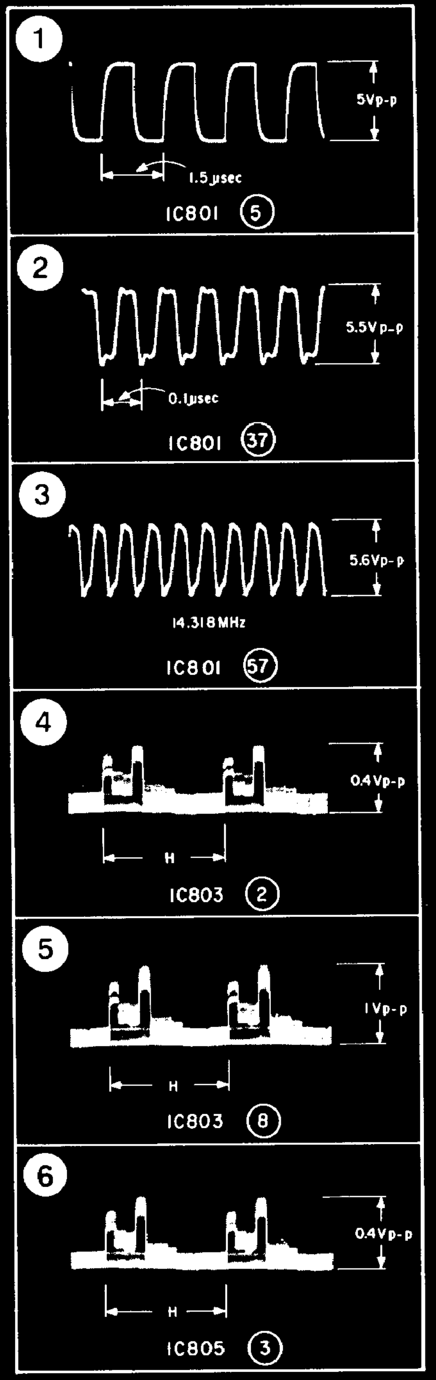
- Refer to page 82 for Printed Wiring Board.

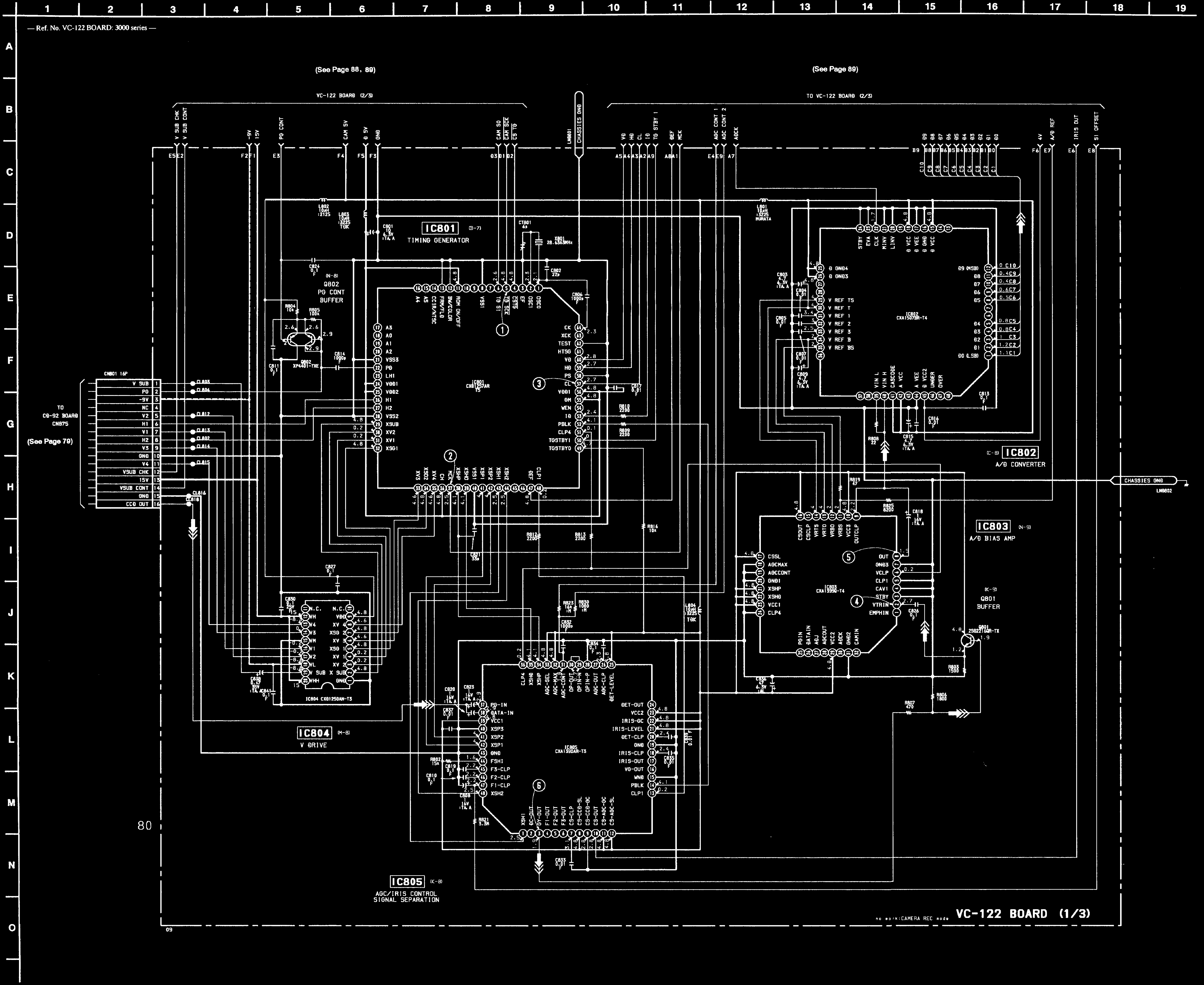
— Ref. No. VC-122 BOARD: 3000 series —

- **SIGNAL PATH**

|  | VIDEO SIGNAL |  |  | AUDIO SIGNAL |
|---|---|---|---|---|
|  | CHROMA | Y | Y/CHROMA |  |
| REC |  |  | ➡≫ |  |
| PB |  |  |  |  |

**VC-122** BOARD (1/3)



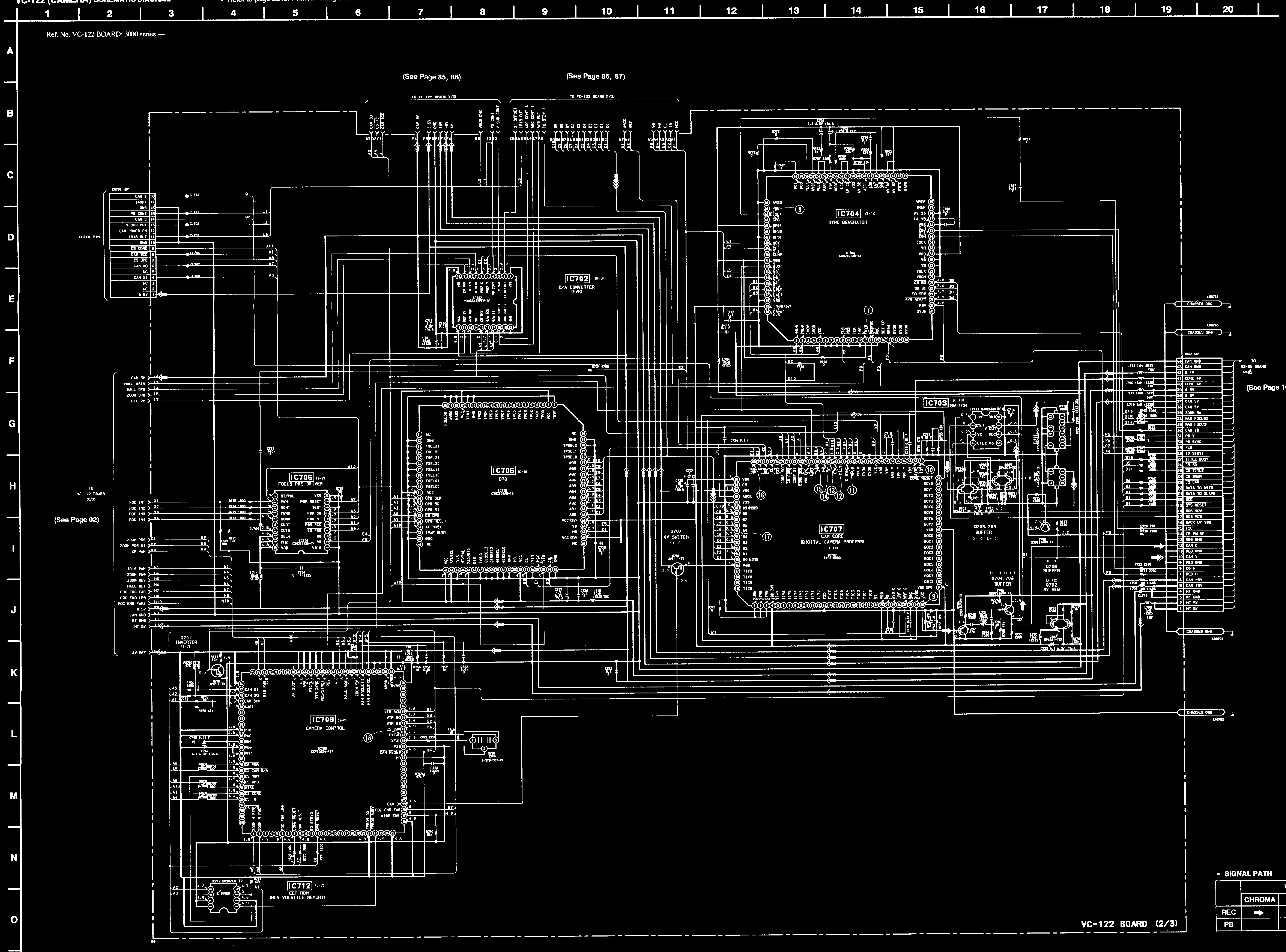


(See Page 88, 89)
VC-122 BOARD (2/3)
(See Page 89)
TO VC-122 BOARD (2/3)
CHASSIES GND
IC801 TIMING GENERATOR
CXD1257AR
Q802 PG CONT BUFFER
IC802 A/D CONVERTER
CXA1507BR-T4
IC803 A/D BIAS AMP
CXA1399Q-T4
Q801 BUFFER
IC804 V DRIVE
CXD1250AN-T3
IC805 AGC/IRIS CONTROL SIGNAL SEPARATION
CXA1390AR-T3
CN801 16P
TO CG-92 BOARD CN875
(See Page 79)
80
VC-122 BOARD (1/3)
no mark: CAMERA REC mode

## VC-122 (CAMERA) SCHEMATIC DIAGRAM

- Refer to page 82 for Printed Wiring Board.

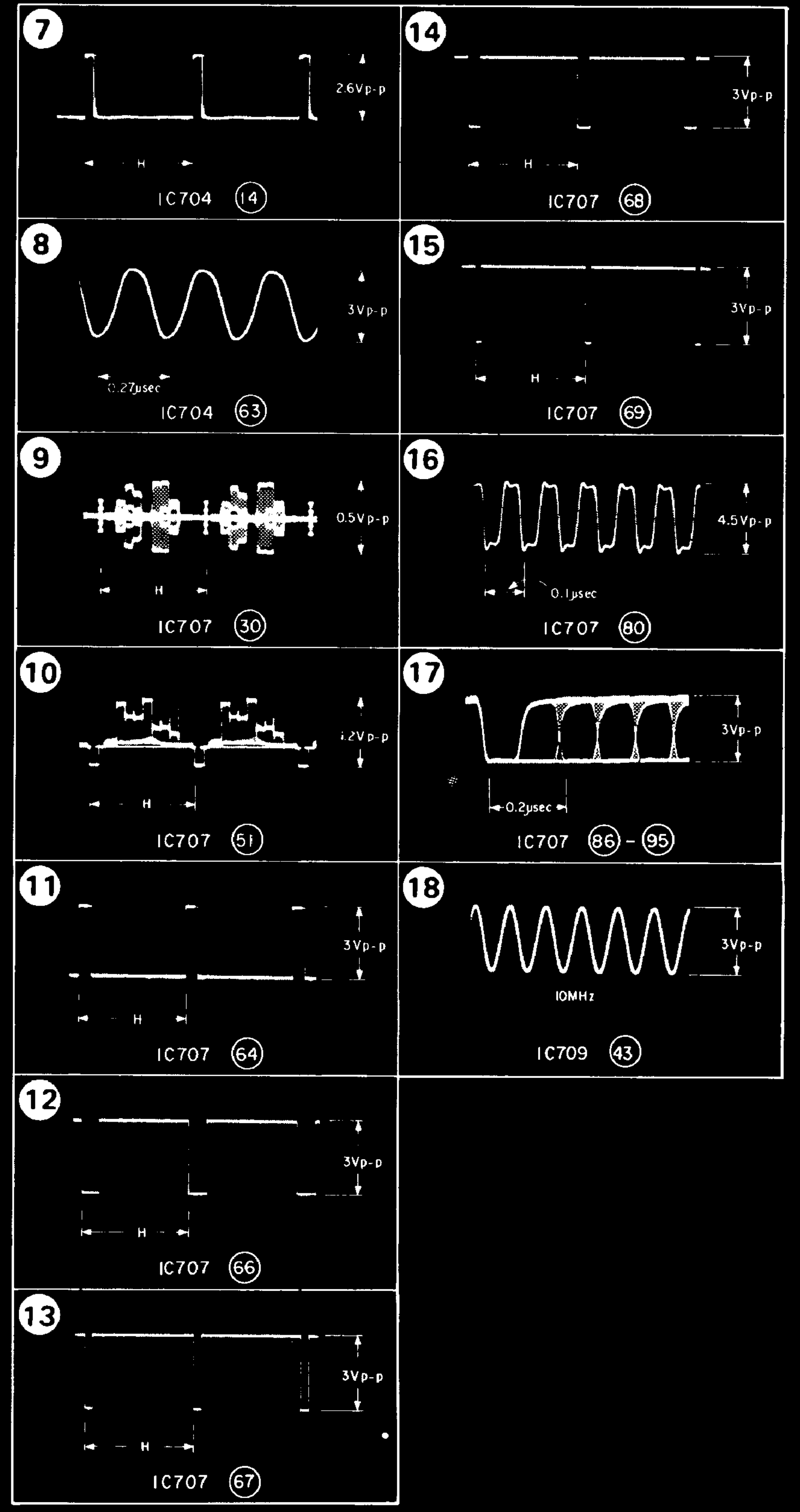
— Ref. No. VC-122 BOARD: 3000 series —


(See Page 85, 86)
(See Page 86, 87)
TO VC-122 BOARD (1/3)
CHECK PIN
IC704 SYNC GENERATOR
IC702 D/A CONVERTER (EVR)
IC705 OPB
IC706 FOCUS PRE DRIVER
IC707 CAM CORE (DIGITAL CAMERA PROCESS)
IC703 SWITCH
Q707 4V SWITCH
Q703, 709 BUFFER
Q708 BUFFER
Q704, 706 BUFFER
Q702 3V REG
Q701 INVERTER
IC709 CAMERA CONTROL
IC712 EEP ROM (NON VOLATILE MEMORY)
TO VC-122 BOARD (1/3)
(See Page 92)
TO VS-95 BOARD
(See Page 108)
VC-122 BOARD (2/3)

- **SIGNAL PATH**

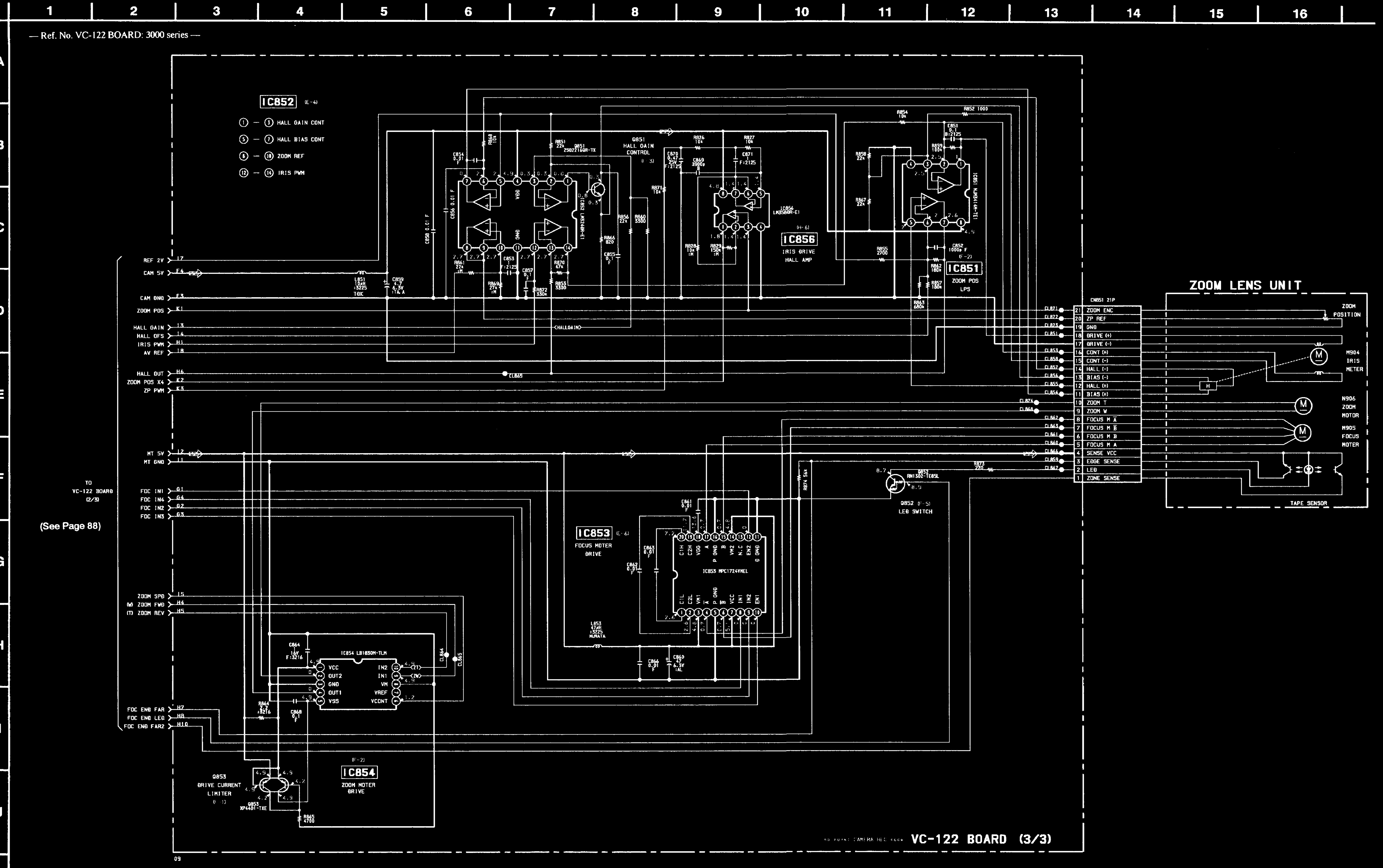
| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | ➡ | ➡» | ➡»» | |
| PB | | | | |

## VC-122 BOARD (2/3)



## VC-122 (LENS DRIVE) SCHEMATIC DIAGRAM

- Refer to page 82 for Printed Wiring Board.


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
— Ref. No. VC-122 BOARD: 3000 series —
IC852 (E-4)
① — ③ HALL GAIN CONT
⑤ — ⑦ HALL BIAS CONT
⑧ — ⑩ ZOOM REF
⑫ — ⑭ IRIS PWM
REF 2V I7
CAM 5V F4
CAM GND F3
ZOOM POS K1
HALL GAIN I3
HALL OFS I4
IRIS PWM H1
AV REF I8
HALL OUT H6
ZOOM POS X4 K2
ZP PWM K3
MT 5V I2
MT GND I1
TO VC-122 BOARD (2/3)
(See Page 88)
FOC IN1 G1
FOC IN4 G4
FOC IN2 G2
FOC IN3 G3
ZOOM SPD I5
(W) ZOOM FWD H4
(T) ZOOM REV H5
FOC END FAR H7
FOC END LED H8
FOC END FAR2 H10
Q851 HALL GAIN CONTROL
IC856 LM358DR-E1
(H-6)
IC856
IRIS DRIVE HALL AMP
IC851 NJM3414M-TE1
(F-2)
IC851
ZOOM POS LPS
C852 1000p F
R855 2700
R862 180k
R857 180k
R863 680k
R867 22k
R829 150k
IC853 (E-6)
FOCUS MOTER DRIVE
IC853 MPC1724VMEL
C1H C2H VGG A P GND B VM2 N.C EN2 D GND
C1L C2L VM1 Ā P GND B̄ VCC IN1 IN2 EN1
C861 0.01 F
C862 0.01 F
C863 0.01 F
R874 56k
Q852 RN1302-TE85L
Q852 (F-5)
LED SWITCH
IC854 LB1850M-TLM
VCC OUT2 GND OUT1 VSS
IN2 IN1 VM VREF VCCNT
(F-2)
IC854
ZOOM MOTER DRIVE
Q853
DRIVE CURRENT LIMITER
Q853 XP4401-TXE
R864 2.2 :3216
C868 0.1 F
R865 4700
CN851 21P
21 ZOOM ENC
20 ZP REF
19 GND
18 DRIVE (+)
17 DRIVE (−)
16 CONT (+)
15 CONT (−)
14 HALL (−)
13 BIAS (−)
12 HALL (+)
11 BIAS (+)
10 ZOOM T
9 ZOOM W
8 FOCUS M Ā
7 FOCUS M B̄
6 FOCUS M B
5 FOCUS M A
4 SENSE VCC
3 EDGE SENSE
2 LED
1 ZONE SENSE
CL871 CL872 CL873 CL851 CL853 CL858 CL857 CL856 CL855 CL854 CL874 CL868 CL862 CL863 CL861 CL860 CL866 CL859 CL867
ZOOM LENS UNIT
ZOOM POSITION
M904 IRIS METER
N906 ZOOM MOTOR
M905 FOCUS MOTER
H
TAPE SENSOR
CAMERA REC mode
VC-122 BOARD (3/3)
09

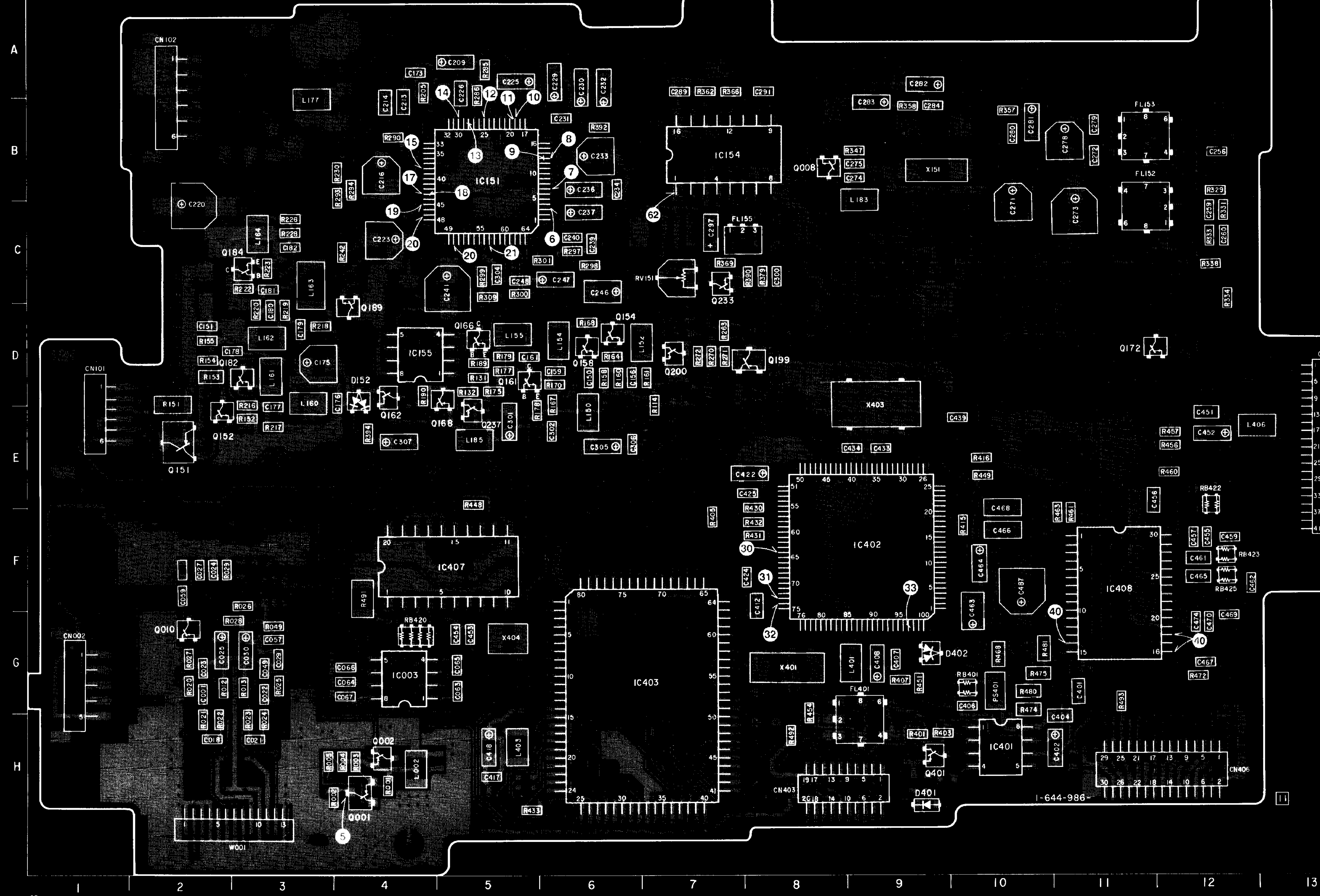
## VS-95 (REC/PB HEAD AMP, VIDEO, SERVO/SYSTEM CONTROL) PRINTED WIRING BOARD

— Ref. No. VS-95 BOARD: 4000 series —

- **For printed wiring boards.**
- VS-95 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

**VS-95** BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
H
CN102
CN101
CN002
IC151
IC154
IC155
IC407
IC402
IC403
IC408
IC003
IC401
X403
X404
X401
X151
FL153
FL152
FL155
FL401
RV151
CN404
CN403
CN405
W001
Q001
Q002
Q010
Q151
Q152
Q162
Q168
Q172
Q184
Q189
Q199
Q200
Q233
Q401
D401
D402
1-644-986-
1
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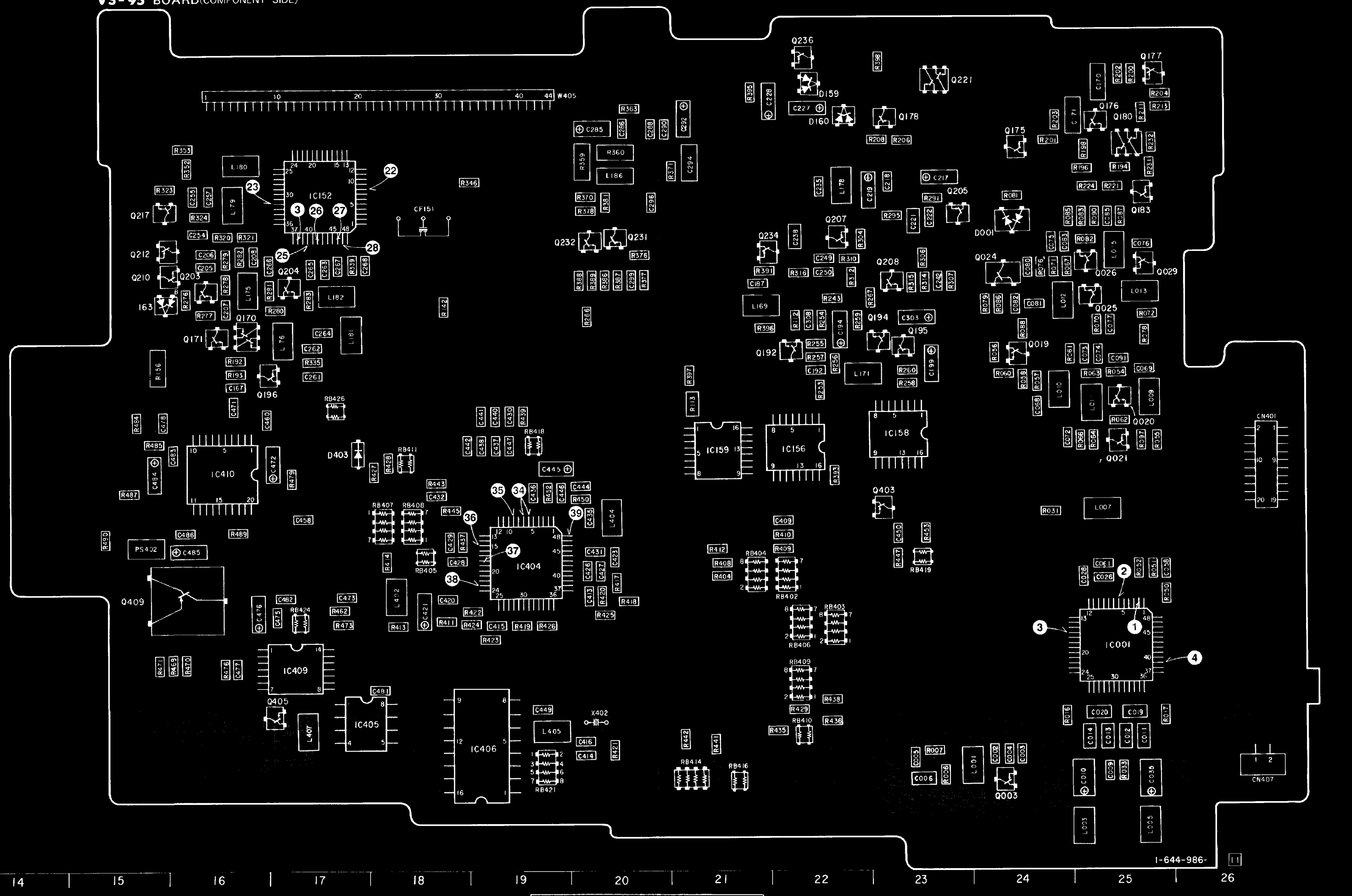
12

**VS-95** BOARD (COMPONENT SIDE)


IC152
IC410
IC404
IC409
IC405
IC406
IC159
IC156
IC158
IC001
CF151
PS432
Q409
Q405
Q403
Q003
Q021
Q177
Q221
Q236
CN401
CN407
1-644-986-
13
14
15
16
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19
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21
22
23
24
25
26

**VIDEO** **VIDEO**

**VIDEO** **VIDEO**

( DIODE )

| | | | |
|---|---|---|---|
| D001 | 8-719-800-76 | DIODE | 1SS123 |
| D152 | 8-719-027-48 | DIODE | MA142WA |
| D159 | 8-719-027-50 | DIODE | MA142WK |
| D160 | 8-719-027-50 | DIODE | MA142WK |
| D163 | 8-719-027-50 | DIODE | MA142WK |
| D401 | 8-719-421-27 | DIODE | MA728 |
| D402 | 8-719-027-50 | DIODE | MA142WK-(TX) |
| D403 | 8-719-404-46 | DIODE | MA110 |

( IC )

| | | | |
|---|---|---|---|
| IC001 | 8-752-033-38 | IC | CXA1202R |
| IC003 | 8-752-053-21 | IC | CXA1211M |
| IC151 | 8-752-065-54 | IC | CXA1207AR |
| IC152 | 8-752-065-56 | IC | CXA1208R |
| IC154 | 8-752-332-68 | IC | CXL5502M |
| IC155 | 8-752-053-21 | IC | CXA1211M |
| IC156 | 8-759-055-82 | IC | M62353GP |
| IC158 | 8-759-055-82 | IC | M62353GP |
| IC159 | 8-759-636-33 | IC | CXA1452N |
| IC401 | 8-759-056-84 | IC | S-8420AF |
| IC402 | 8-752-836-29 | IC | CXP80624-416R |
| IC403 | 8-759-073-94 | IC | uPD75316GF-295-3B9 |
| IC404 | 8-759-059-42 | IC | CXA1481AR |
| IC405 | 8-759-044-78 | IC | BR9011BF-RE2 |
| IC406 | 8-759-081-96 | IC | uPD6456GS-620 |
| IC407 | 8-759-145-63 | IC | uPD7564G-540 |
| IC408 | 8-759-057-60 | IC | MCD004BM |
| IC409 | 8-759-999-02 | IC | TL1596CDB |
| IC410 | 8-759-062-02 | IC | MPC1720VM |

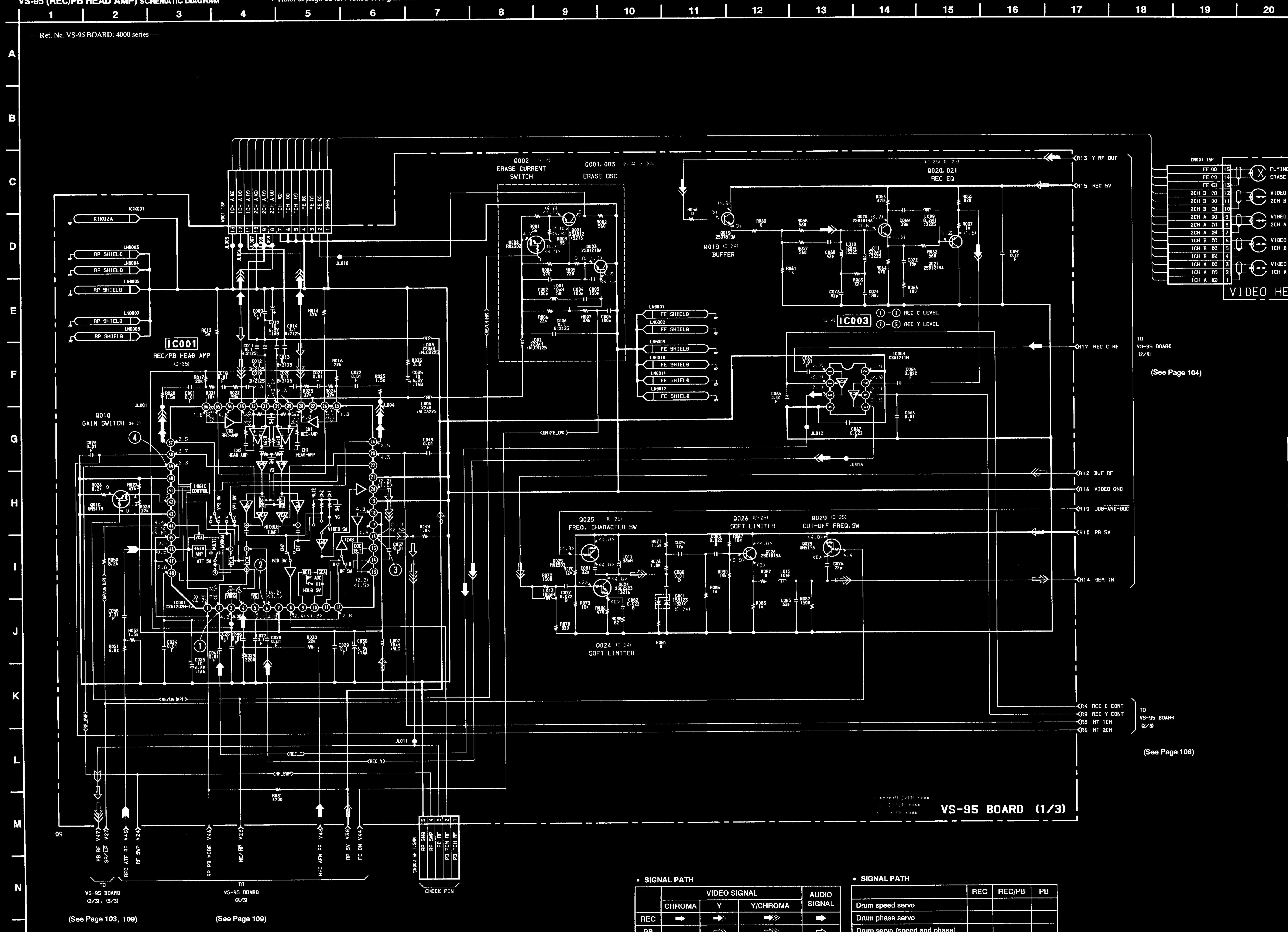
( TRANSISTOR )

| | | | |
|---|---|---|---|
| Q001 | 8-729-216-22 | TRANSISTOR | 2SA812 |
| Q002 | 8-729-014-16 | TRANSISTOR | RN2302 |
| Q003 | 8-729-402-55 | TRANSISTOR | 2SB1218A-R |
| Q008 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q010 | 8-729-403-35 | TRANSISTOR | UN5113 |
| Q019 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q020 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q021 | 8-729-402-55 | TRANSISTOR | 2SB1218A-R |
| Q024 | 8-729-102-07 | TRANSISTOR | 2SC2223 |
| Q025 | 8-729-014-16 | TRANSISTOR | RN2302 |
| Q026 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q029 | 8-729-403-35 | TRANSISTOR | UN5113 |
| Q151 | 8-729-101-07 | TRANSISTOR | 2SB798 |
| Q152 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q154 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q158 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q161 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q162 | 8-729-403-35 | TRANSISTOR | UN5113 |
| Q166 | 8-729-402-55 | TRANSISTOR | 2SB1218A-R |
| Q168 | 8-729-403-35 | TRANSISTOR | UN5113 |
| Q170 | 8-729-420-20 | TRANSISTOR | XN4312 |
| Q171 | 8-729-117-73 | TRANSISTOR | 2SC4178 |
| Q172 | 8-729-117-73 | TRANSISTOR | 2SC4178 |
| Q175 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q176 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q177 | 8-729-402-55 | TRANSISTOR | 2SB1218A-R |
| Q178 | 8-729-402-55 | TRANSISTOR | 2SB1218A-R |
| Q180 | 8-729-422-54 | TRANSISTOR | XN4215 |
| Q182 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q183 | 8-729-420-53 | TRANSISTOR | UN5115 |
| Q184 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q189 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q192 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q194 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q195 | 8-729-402-55 | TRANSISTOR | 2SB1218A-R |
| Q196 | 8-729-403-35 | TRANSISTOR | UN5113 |
| Q199 | 8-729-807-87 | TRANSISTOR | 2SB1295 |
| Q200 | 8-729-013-88 | TRANSISTOR | RN1302 |
| Q203 | 8-729-402-55 | TRANSISTOR | 2SB1218A-R |
| Q204 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q205 | 8-729-402-42 | TRANSISTOR | UN5213 |
| Q207 | 8-729-403-35 | TRANSISTOR | UN5113 |
| Q208 | 8-729-013-88 | TRANSISTOR | RN1302 |
| Q210 | 8-729-402-42 | TRANSISTOR | UN5213 |
| Q212 | 8-729-402-55 | TRANSISTOR | 2SB1218A-R |
| Q217 | 8-729-402-42 | TRANSISTOR | UN5213 |
| Q221 | 8-729-420-12 | TRANSISTOR | XN4213 |
| Q231 | 8-729-402-55 | TRANSISTOR | 2SB1218A-R |
| Q232 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q233 | 8-729-402-32 | TRANSISTOR | 2SD1819A-R |
| Q234 | 8-729-402-55 | TRANSISTOR | 2SB1218A-R |
| Q236 | 8-729-420-56 | TRANSISTOR | UN511E |
| Q237 | 8-729-425-50 | TRANSISTOR | 2SB1462Q |
| Q401 | 8-729-402-48 | TRANSISTOR | UN521E |
| Q403 | 8-729-403-35 | TRANSISTOR | UN5113 |
| Q405 | 8-729-013-88 | TRANSISTOR | RN1302 |
| Q409 | 8-729-017-67 | TRANSISTOR | 2SB1574 |

## VS-95 (REC/PB HEAD AMP) SCHEMATIC DIAGRAM

• Refer to page 95 for Printed Wiring Board.

— Ref. No. VS-95 BOARD: 4000 series —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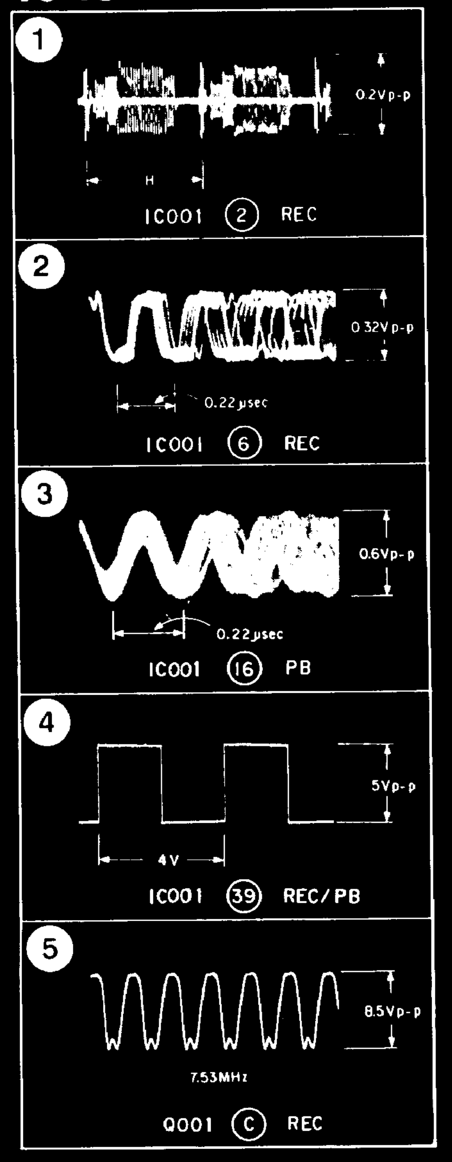
K
L
M
N
O
P
IC001
REC/PB HEAD AMP
KIKUZA
RP SHIELD
Q010
GAIN SWITCH
Q002
ERASE CURRENT SWITCH
Q001, 003
ERASE OSC
Q020, 021
REC EQ
Q019
BUFFER
IC003
REC C LEVEL
REC Y LEVEL
FE SHIELD
Q025
FREQ. CHARACTER SW
Q026
SOFT LIMITER
Q029
CUT-OFF FREQ.SW
Q024
SOFT LIMITER
R13 Y RF OUT
R15 REC 5V
R17 REC C RF
R12 BUF RF
R16 VIDEO GND
R19 JOG-AMB-DOC
R10 PB 5V
R14 GEN IN
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
TO
VS-95 BOARD
(2/3)
(See Page 104)
(See Page 108)
FLYING ERASE
VIDEO 2CH B
VIDEO 2CH A
VIDEO 1CH B
VIDEO 1CH A
VIDEO HEAD
CHECK PIN
TO
VS-95 BOARD
(2/3), (3/3)
(See Page 103, 109)
TO
VS-95 BOARD
(3/3)
(See Page 109)
VS-95 BOARD (1/3)

### VS-95 BOARD (1/3)



• SIGNAL PATH

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | ➡ | ➡» | ➡»» | ➡ |
| PB | | ⇨» | ⇨»» | ⇨ |

• SIGNAL PATH

| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | | |
| Drum phase servo | | | |
| Drum servo (speed and phase) | | | |
| Capstan speed servo | | | |
| Capstan phase servo | | | |
| Capstan servo (speed and phase) | | | |
| Ref. signal | ➤ | | ▷ |

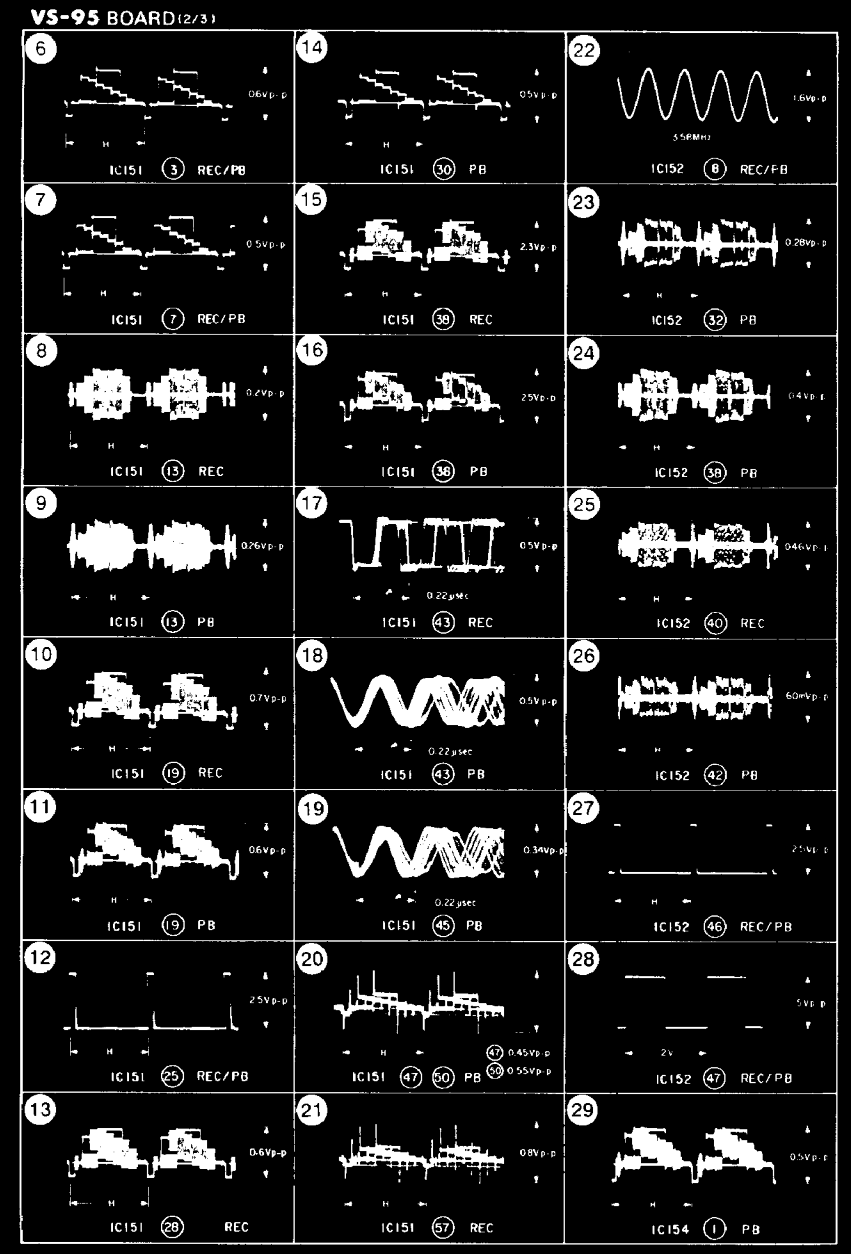
## VS-95 (VIDEO) SCHEMATIC DIAGRAM

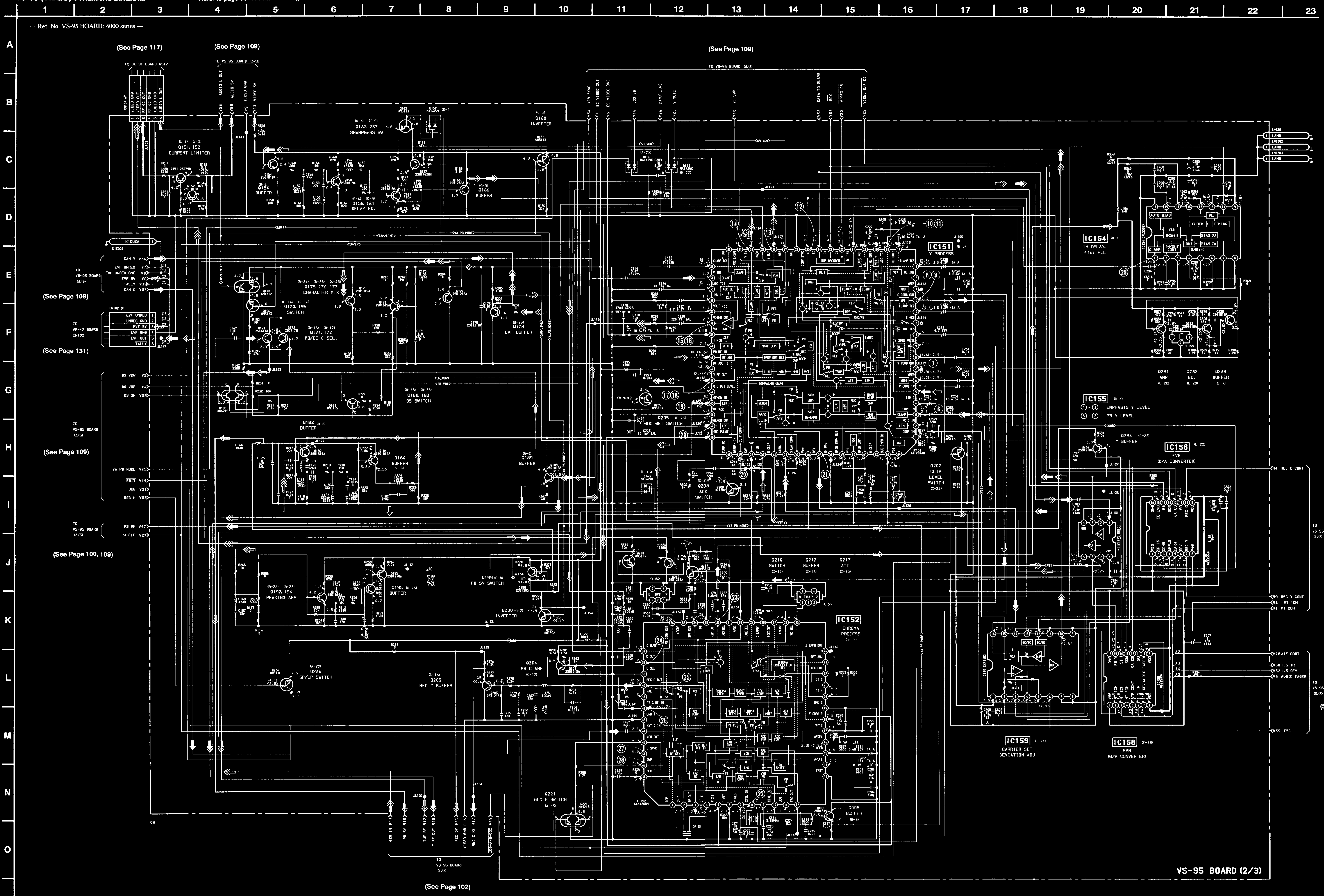
- Refer to page 95 for Printed Wiring Board.

— Ref. No. VS-95 BOARD: 4000 series —

- **SIGNAL PATH**

|  | VIDEO SIGNAL |  |  | AUDIO SIGNAL |
|---|---|---|---|---|
|  | CHROMA | Y | Y/CHROMA |  |
| REC | ➡ | ➡» | ➡⋙ |  |
| PB | ⇨ | ⇨» | ⇨⋙ | ⇨ |

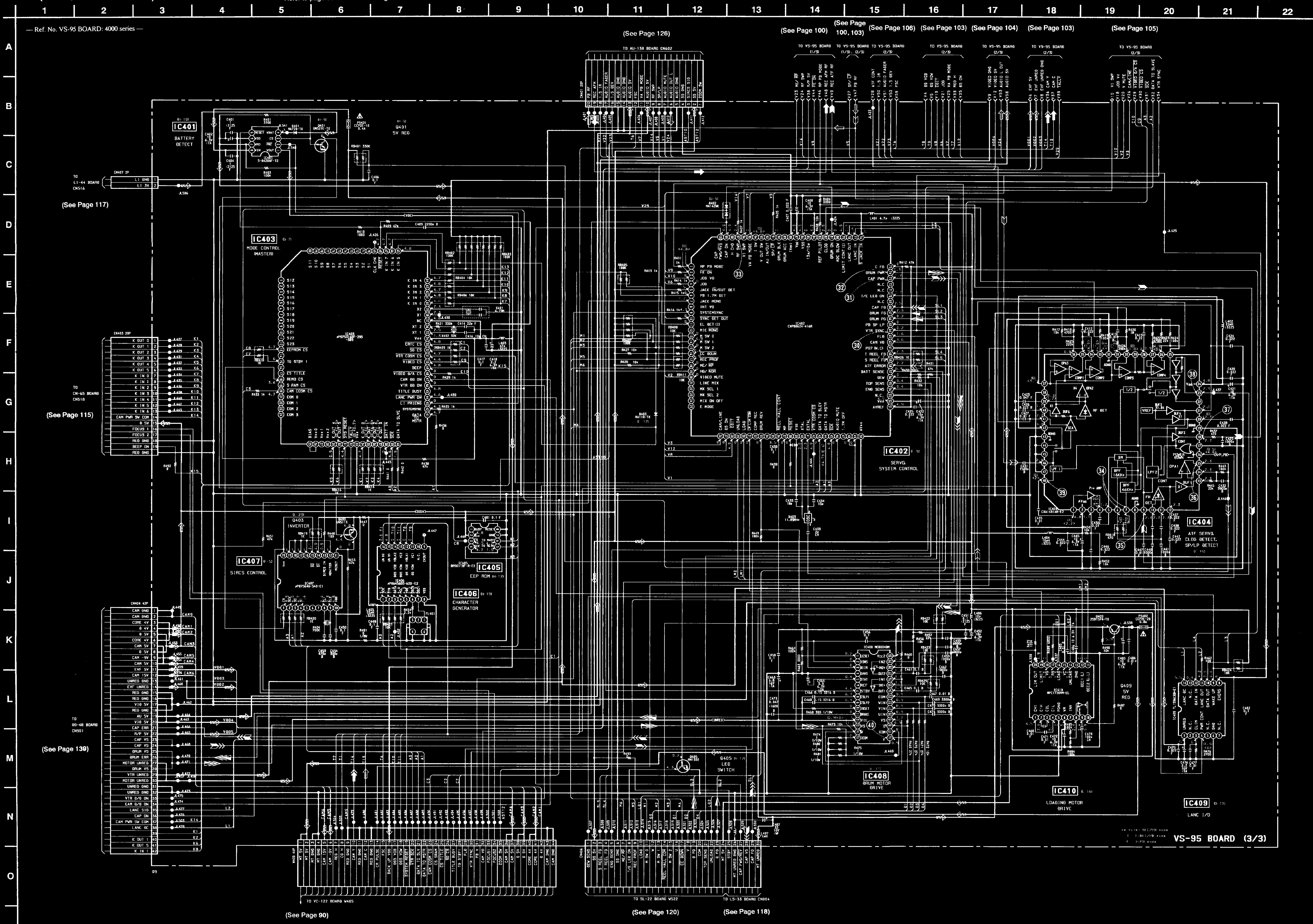



(See Page 117)
TO JK-91 BOARD W517
(See Page 109)
TO VS-95 BOARD (3/3)
(See Page 109)
(See Page 131)
TO VF-42 BOARD CN102
(See Page 100, 109)
(See Page 102)
Q151, 152 CURRENT LIMITER
Q162, 237 SHARPNESS SW
Q168 INVERTER
Q154 BUFFER
Q158, 161 DELAY EQ.
Q166 BUFFER
Q175, 176, 177 CHARACTER MIX
Q170, 196 SWITCH
Q171, 172 PB/EE C SEL.
Q178 EVF BUFFER
Q180, 183 OS SWITCH
Q182 BUFFER
Q184 BUFFER
Q189 BUFFER
Q192, 194 PEAKING AMP
Q195 BUFFER
Q199 PB 5V SWITCH
Q200 INVERTER
Q236 SP/LP SWITCH
Q203 REC C BUFFER
Q204 PB C AMP
Q221 DOC P SWITCH
IC151 Y PROCESS
Q205 DOC SET SWITCH
Q208 ACK SWITCH
Q207 CLIP LEVEL SWITCH
Q210 SWITCH
Q212 BUFFER
Q217 ATT
IC152 CHROMA PROCESS
Q208 BUFFER
IC154 1H DELAY, 4fsc PLL
Q231 AMP
Q232 EQ.
Q233 BUFFER
IC155 EMPHASIS Y LEVEL
PB Y LEVEL
Q234 Y BUFFER
IC156 EVR (D/A CONVERTER)
IC159 CARRIER SET DEVIATION ADJ
IC158 EVR (D/A CONVERTER)
VS-95 BOARD (2/3)

## VS-95 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

- Refer to page 95 for Printed Wiring Board.

— Ref. No. VS-95 BOARD: 4000 series —

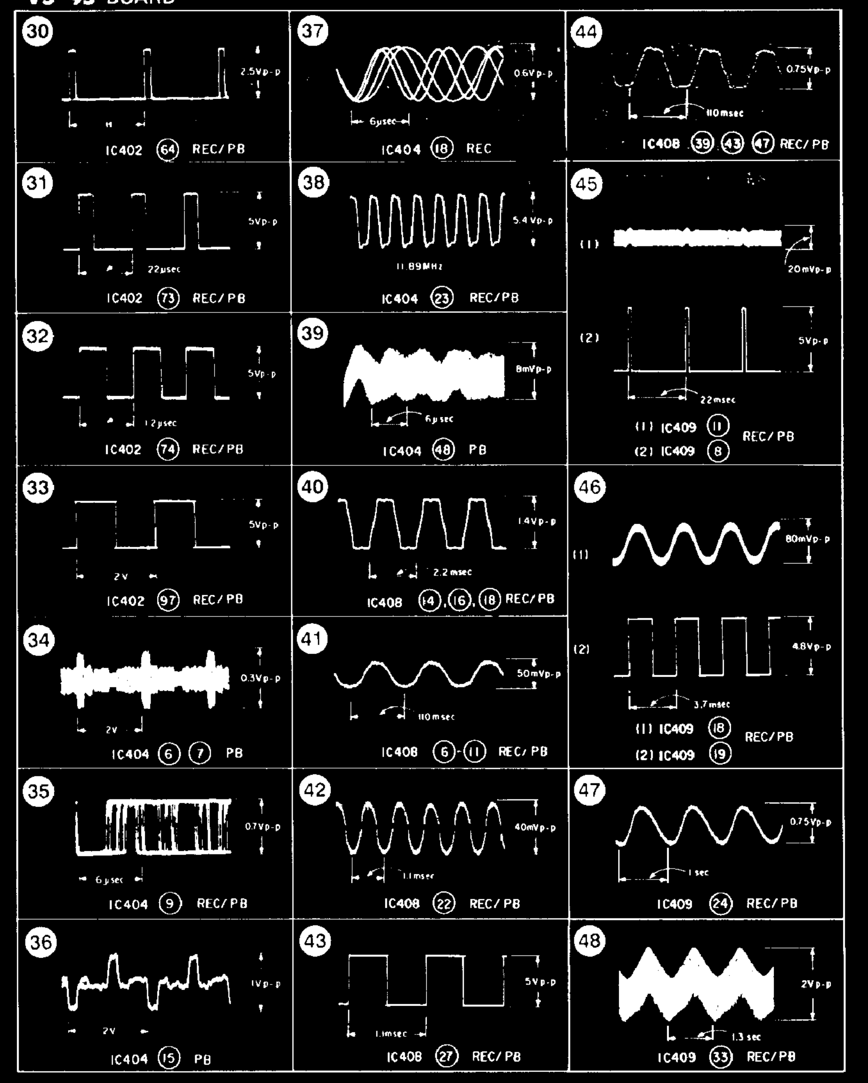

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
(See Page 126)
TO AU-158 BOARD CN402
(See Page 100)
(See Page 100, 103)
(See Page 106)
(See Page 103)
(See Page 104)
(See Page 103)
(See Page 105)
IC401
BATTERY DETECT
Q401
5V REG
TO L1-44 BOARD CN516
(See Page 117)
IC403
MODE CONTROL (MASTER)
TO CN-65 BOARD CN518
(See Page 115)
IC402
SERVO/ SYSTEM CONTROL
IC404
ATF SERVO, CLOG DETECT, SP/LP DETECT
Q405
INVERTER
IC407
SIRCS CONTROL
IC405
EEP ROM
IC406
CHARACTER GENERATOR
TO DD-48 BOARD CN901
(See Page 139)
IC408
DRUM MOTOR DRIVE
Q405
LED SWITCH
IC410
LOADING MOTOR DRIVE
Q409
5V REG
IC409
LANC I/O
VS-95 BOARD (3/3)
TO VC-122 BOARD W405
(See Page 90)
TO SL-22 BOARD W522
(See Page 120)
TO LS-33 BOARD CN004
(See Page 118)

- SIGNAL PATH

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | | ➡ |
| PB | | | | ⇨ |

| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | ▷ | |
| Drum phase servo | | ▷› | |
| Drum servo (speed and phase) | | ▷›› | |
| Capstan speed servo | | | |
| Capstan phase servo | | | ▷› |
| Capstan servo (speed and phase) | | ▷›› | |
| Ref. signal | ➡ | ⇨ | ▷ |

VS-95 BOARD


30
2.5Vp-p
H
IC402 64 REC/PB
31
5Vp-p
22μsec
IC402 73 REC/PB
32
5Vp-p
12μsec
IC402 74 REC/PB
33
5Vp-p
2V
IC402 97 REC/PB
34
0.3Vp-p
2V
IC404 6 7 PB
35
0.7Vp-p
6μsec
IC404 9 REC/PB
36
1Vp-p
2V
IC404 15 PB
37
0.6Vp-p
6μsec
IC404 18 REC
38
5.4Vp-p
11.89MHz
IC404 23 REC/PB
39
8mVp-p
6μsec
IC404 48 PB
40
1.4Vp-p
2.2msec
IC408 14, 16, 18 REC/PB
41
50mVp-p
110msec
IC408 6-11 REC/PB
42
40mVp-p
1.1msec
IC408 22 REC/PB
43
5Vp-p
1.1msec
IC408 27 REC/PB
44
0.75Vp-p
110msec
IC408 39, 43, 47 REC/PB
45
(1)
20mVp-p
(2)
5Vp-p
22msec
(1) IC409 11
(2) IC409 8
REC/PB
46
(1)
80mVp-p
(2)
4.8Vp-p
3.7msec
(1) IC409 18
(2) IC409 19
REC/PB
47
0.75Vp-p
1sec
IC409 24 REC/PB
48
2Vp-p
1.3sec
IC409 33 REC/PB

## CF-32 (CAMERA FUNCTION SWITCH), CN-65 (BOARD LINK), ED-35 (CAMERA FUNCTION SWITCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH), JK-91 (VIDEO/AUDIO JACK), LI-44 (LITFIUM BATTERY HOLDER) PRINTED WIRING BOARDS

— Ref. No. JK-91 BOARD: 3000 series, LI-44 BOARD: 4000 series, MF-191 BOARD: 5000 series, CN-65 BOARD: 6000 series, CF-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —

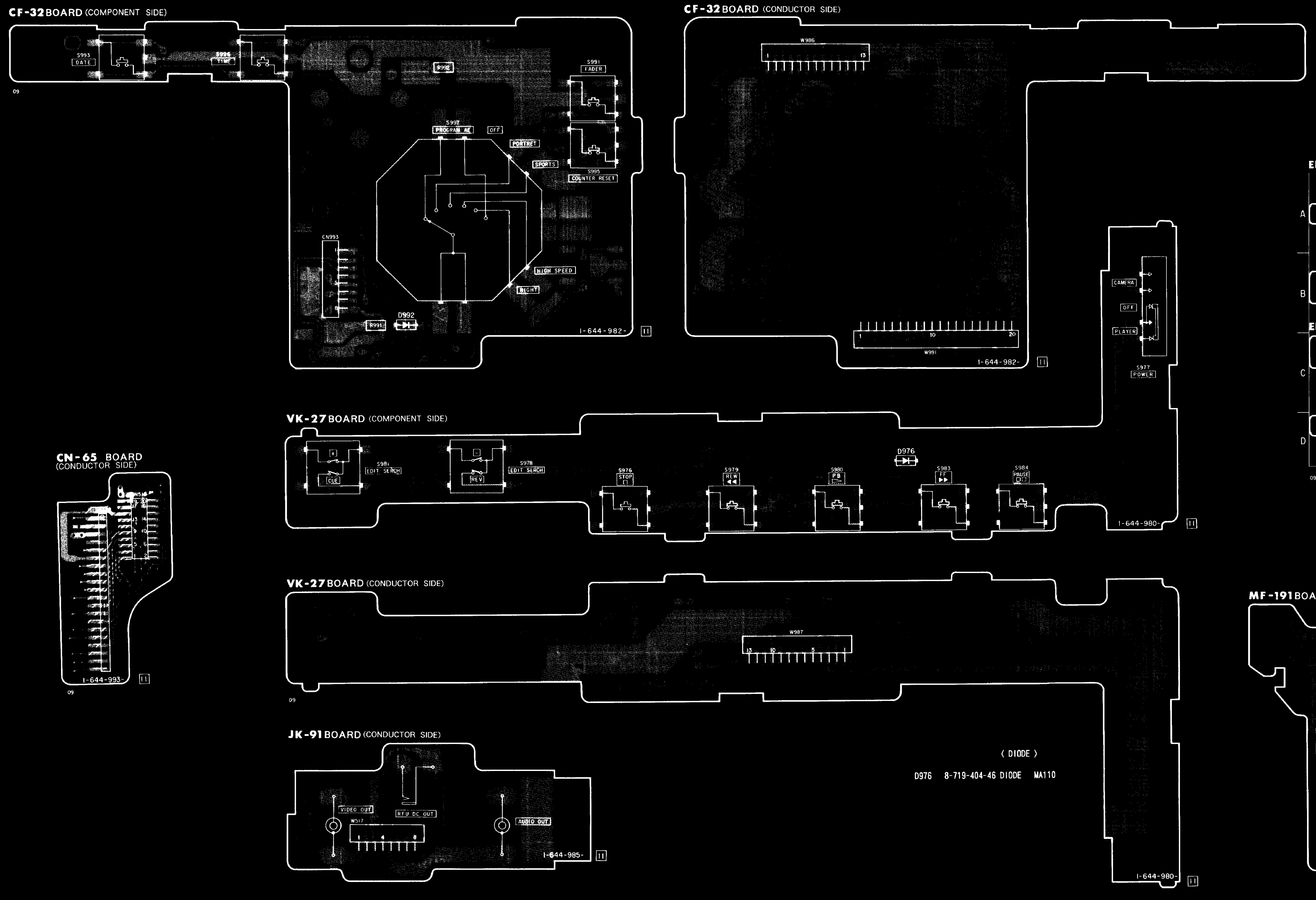
- **For printed wiring boards.**
- CF-32, ED-35, MF-191, VK-27 boards is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

| Caution: | |
|---|---|
| Pattern face side: (Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component side) | Parts on the parts face side seen from the parts face are indicated. |

- **For printed wiring boards.**
- CN-65 board is the printed wiring board which has four layers structure but inner two layers' patterns and component side pattern are omitted.
- ● : Through hole is omitted.

( DIODE )

D992 8-719-404-46 DIODE MA110

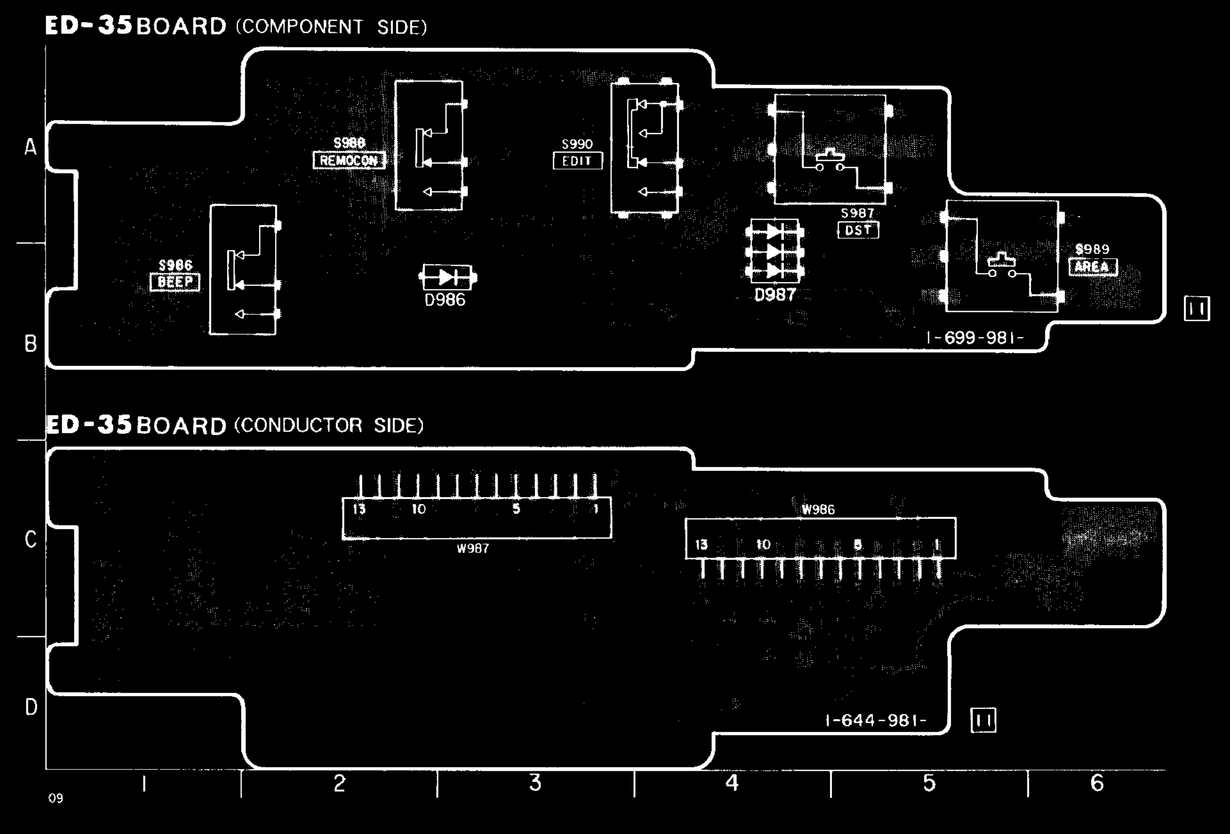

CF-32 BOARD (COMPONENT SIDE)
S993
DATE
S996
TIME
R992
S991
FADER
S997
PROGRAM AE
OFF
PORTRET
SPORTS
S995
COUNTER RESET
CN993
HIGH SPEED
NIGHT
R991
D992
1-644-982-
11
09
CF-32 BOARD (CONDUCTOR SIDE)
W986
1
13
10
20
W991
1-644-982-
11
CAMERA
OFF
PLAYER
S977
POWER
VK-27 BOARD (COMPONENT SIDE)
CUE
S981
EDIT SERCH
REV
S978
EDIT SERCH
S976
STOP
S979
REW
S980
PB
D976
S983
FF
S984
PAUSE
1-644-980-
11
CN-65 BOARD
(CONDUCTOR SIDE)
1-644-993-
11
09
VK-27 BOARD (CONDUCTOR SIDE)
W987
13
10
5
1
09
1-644-980-
11
JK-91 BOARD (CONDUCTOR SIDE)
VIDEO OUT
RFU DC OUT
W517
1
4
8
AUDIO OUT
1-644-985-
11

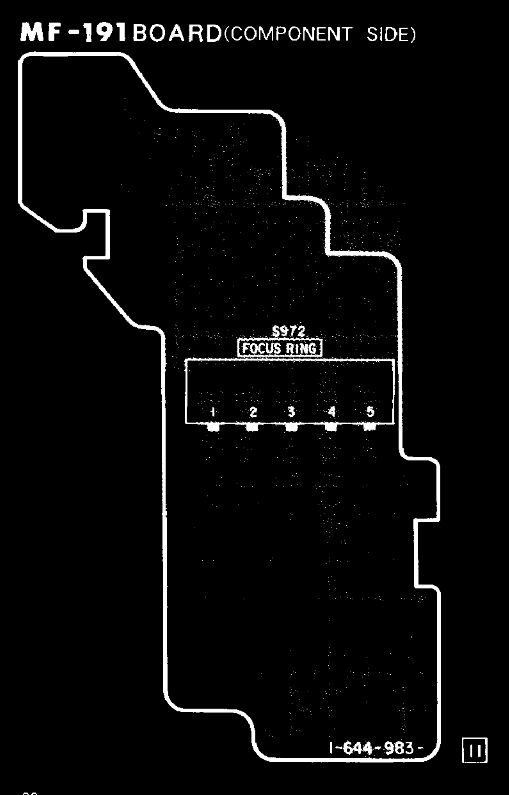
( DIODE )

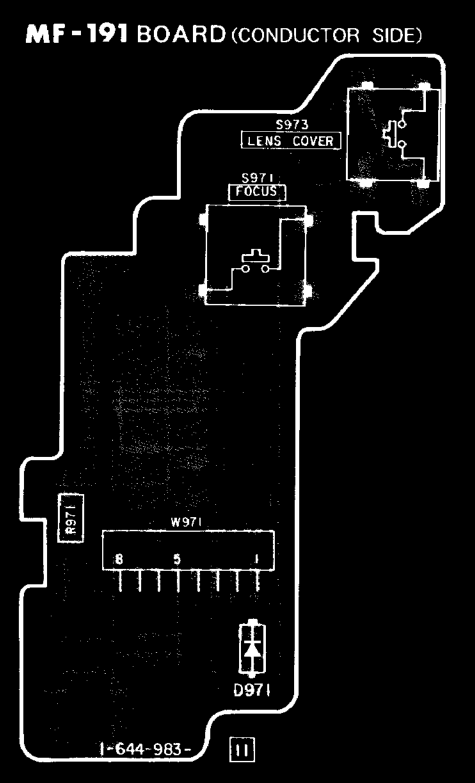
D976 8-719-404-46 DIODE MA110

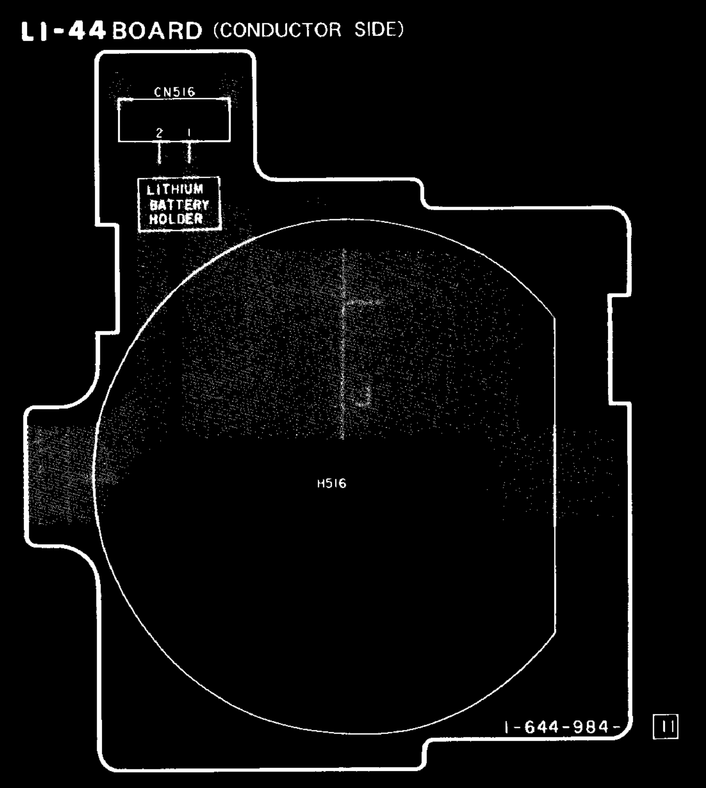
( DIODE )

D986 8-719-404-46 DIODE MA110
D987 8-719-404-40 DIODE MA121


ED-35 BOARD (COMPONENT SIDE)
A
B
S988
REMOCON
S990
EDIT
S986
BEEP
D986
D987
S987
DST
S989
AREA
1-699-981-
11
ED-35 BOARD (CONDUCTOR SIDE)
C
D
13
10
5
1
W987
W986
13
10
5
1
1-644-981-
11
09
1
2
3
4
5
6


MF-191 BOARD (COMPONENT SIDE)
S972
FOCUS RING
1
2
3
4
5
1-644-983-
11
09


MF-191 BOARD (CONDUCTOR SIDE)
S973
LENS COVER
S971
FOCUS
R971
W971
8
5
1
D971
1-644-983-
11

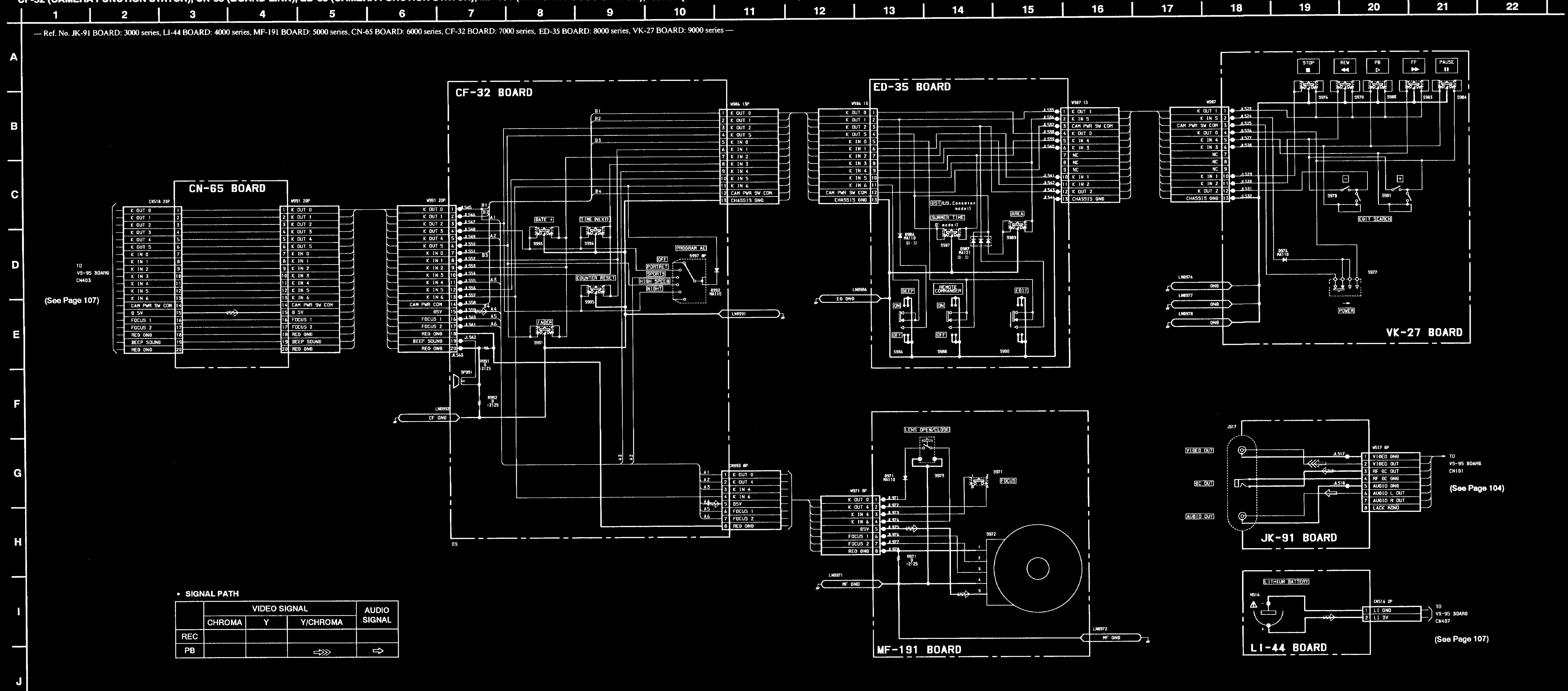

LI-44 BOARD (CONDUCTOR SIDE)
CN516
2
1
LITHIUM BATTERY HOLDER
H516
1-644-984-
11

( DIODE )

D971 8-719-404-46 DIODE MA110

## CF-32 (CAMERA FUNCTION SWITCH), CN-65 (BOARD LINK), ED-35 (CAMERA FUNCTION SWITCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH), JK-91 (VIDEO/AUDIO JACK), LI-44 (LITFIUM BATTERY HOLDER) SCHEMATIC DIAGRAMS

— Ref. No. JK-91 BOARD: 3000 series, LI-44 BOARD: 4000 series, MF-191 BOARD: 5000 series, CN-65 BOARD: 6000 series, CF-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
A B C D E F G H I J
CN-65 BOARD
CN518 20P
W991 20P
TO VS-95 BOARD CN405
(See Page 107)
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
B 5V
FOCUS 1
FOCUS 2
REG GND
BEEP SOUND
REG GND
CF-32 BOARD
W991 20P
GATE
TIME INDEX
COUNTER RESET
FADER
PROGRAM AE
OFF
PORTRET
SPORTS
HIGH SPEED
NIGHT
S993
S994
S995
S991
S997 8P
D992 MA110
SP991
R991
R992
LN8991
LN8992
CF GND
CN993 8P
W986 13P
CAM PWR SW COM
CHASSIS GND
ED-35 BOARD
W986 13
W987 13
NC
(U.S.Canadian model)
SUMMER TIME
AREA
BEEP
REMOTE COMMANDER
EDIT
ON
OFF
S986
S987
S988
S989
S990
D986 MA110
D987 MA121
LN8986
EG GND
STOP
REW
PB
FF
PAUSE
S976
S979
S980
S983
S984
S978
S981
S977
D974 MA110
EDIT SEARCH
POWER
W987
LN8974
LN8977
LN8978
GND
VK-27 BOARD
MF-191 BOARD
LENS OPEN/CLOSE
FOCUS
S971
S972
S973
W971 8P
D971 MA110
R971
LN8971
LN8972
MF GND
J517
VIDEO OUT
DC OUT
AUDIO OUT
W517 8P
VIDEO GND
VIDEO OUT
RF DC OUT
RF DC GND
AUDIO GND
AUDIO L OUT
AUDIO R OUT
LACK KOND
TO VS-95 BOARD CN101
(See Page 104)
JK-91 BOARD
LITHIUM BATTERY
M516
CN516 2P
LI GND
LI 3V
TO VS-95 BOARD CN407
(See Page 107)
LI-44 BOARD

• SIGNAL PATH

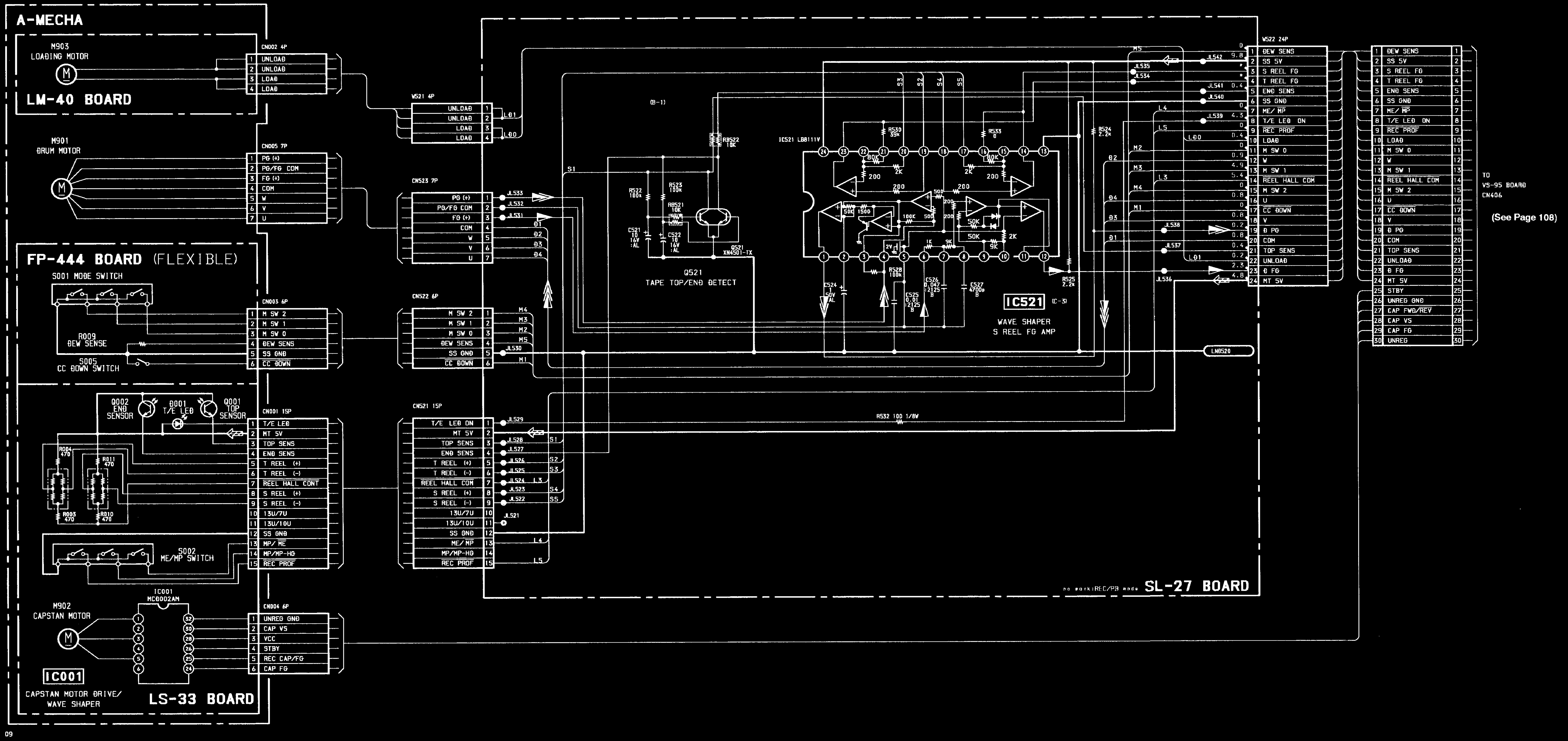
|  | VIDEO SIGNAL |  |  | AUDIO SIGNAL |
|---|---|---|---|---|
|  | CHROMA | Y | Y/CHROMA |  |
| REC |  |  |  |  |
| PB |  |  | ⇨⇨ | ⇨ |

## SL-27 (MECHA CONTROL), FP-444 (TAPE SENSOR), LM-40 (LOADING MOTOR DRIVE), LS-33 (CAPSTAN MOTOR DRIVE, TAPE SENSOR) SCHEMATIC DIAGRAMS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

— Ref. No. SL-27 BOARD: 5000 series —

A B C D E F G H I J


A-MECHA
M903 LOADING MOTOR
LM-40 BOARD
CN002 4P
UNLOAD
UNLOAD
LOAD
LOAD
M901 DRUM MOTOR
CN005 7P
PG (+)
PG/FG COM
FG (+)
COM
W
V
U
FP-444 BOARD (FLEXIBLE)
S001 MODE SWITCH
R009 DEW SENSE
S005 CC DOWN SWITCH
CN003 6P
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
Q002 END SENSOR
D001 T/E LED
Q001 TOP SENSOR
CN001 15P
T/E LED
MT 5V
TOP SENS
END SENS
T REEL (+)
T REEL (-)
REEL HALL CONT
S REEL (+)
S REEL (-)
13U/7U
13U/10U
SS GND
MP/ME
MP/MP-HG
REC PROF
S002 ME/MP SWITCH
M902 CAPSTAN MOTOR
IC001 MC0002AM
CN004 6P
UNREG GND
CAP VS
VCC
STBY
REC CAP/FG
CAP FG
IC001
CAPSTAN MOTOR DRIVE/ WAVE SHAPER
LS-33 BOARD
09
W521 4P
CN523 7P
CN522 6P
CN521 15P
Q521 TAPE TOP/END DETECT
IC521 LB8111V
IC521
WAVE SHAPER S REEL FG AMP
R532 100 1/8W
W522 24P
DEW SENS
SS 5V
S REEL FG
T REEL FG
END SENS
SS GND
ME/MP
T/E LED ON
REC PROF
LOAD
M SW 0
W
M SW 1
REEL HALL COM
M SW 2
U
CC DOWN
V
D PG
COM
TOP SENS
UNLOAD
D FG
MT 5V
LND520
SL-27 BOARD
STBY
UNREG GND
CAP FWD/REV
CAP VS
CAP FG
UNREG
TO VS-95 BOARD CN406
(See Page 108)

- **SIGNAL PATH**

| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | ▷ | |
| Drum phase servo | | ▷▷ | |
| Drum servo (speed and phase) | | ▷▷▷ | |
| Capstan speed servo | | | |
| Capstan phase servo | | | |
| Capstan servo (speed and phase) | | | |
| Ref. signal | | | |

## SL-27 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. SL-27 BOARD: 5000 series —

- FP-444, LM-40, LS-33 boards are replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

- **For printed wiring boards.**
- SL-27 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:

| | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

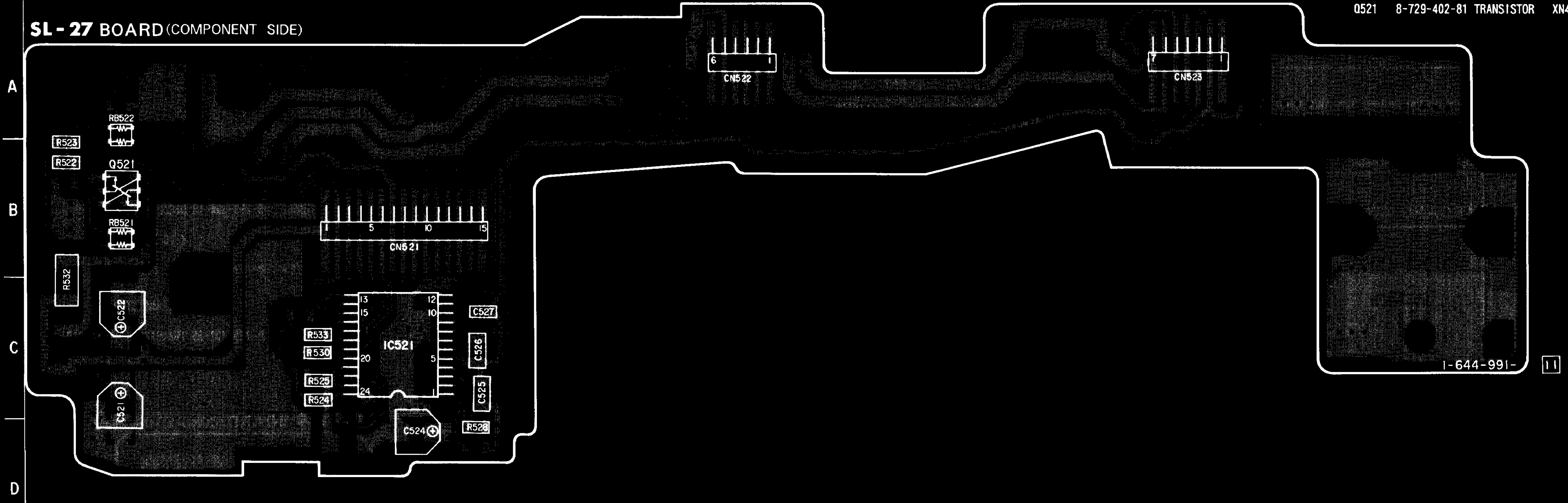
〈 IC 〉

IC521 8-759-059-09 LB8111V

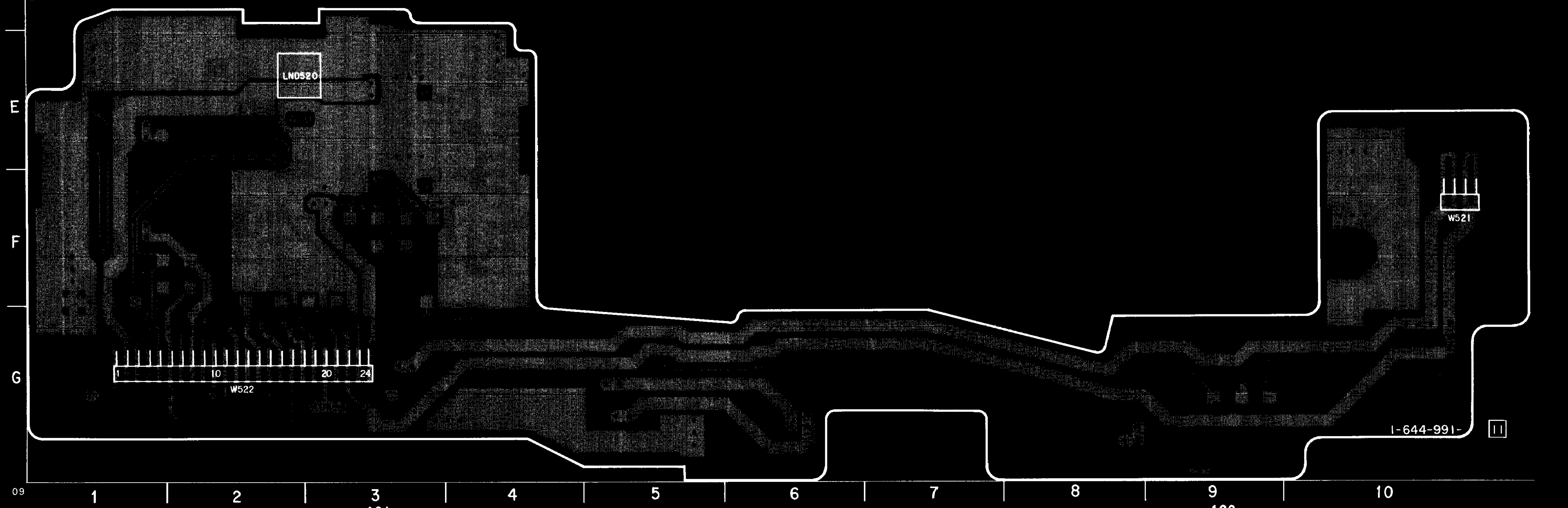
〈 TRANSISTOR 〉

Q521 8-729-402-81 TRANSISTOR XN4501

**SL-27** BOARD (COMPONENT SIDE)


A
B
C
D
RB522
R523
R522
Q521
RB521
R532
C522
C521
CN521
1
5
10
15
13
12
15
10
IC521
20
5
24
R533
R530
R525
R524
C527
C526
C525
C524
R528
CN522
6
1
CN523
7
1
1-644-991-
11

**SL-27** BOARD (CONDUCTOR SIDE)


E
F
G
LND520
W522
1
10
20
24
W521
1-644-991-
11
1
2
3
4
5
6
7
8
9
10

## AU-138 (AFM AUDIO), MA-149 (MIC JACK, MIC AMP) PRINTED WIRING BOARDS

— Ref. No. AU-138, MA-149 BOARDS: 2000 series —

- **For printed wiring boards.**
- AU-138, MA-149 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

( IC )

IC601 8-759-823-19 IC CXA1488RR
IC602 8-749-923-29 IC RS-20E-T

( DIODE )

D552 8-719-404-46 DIODE MA110

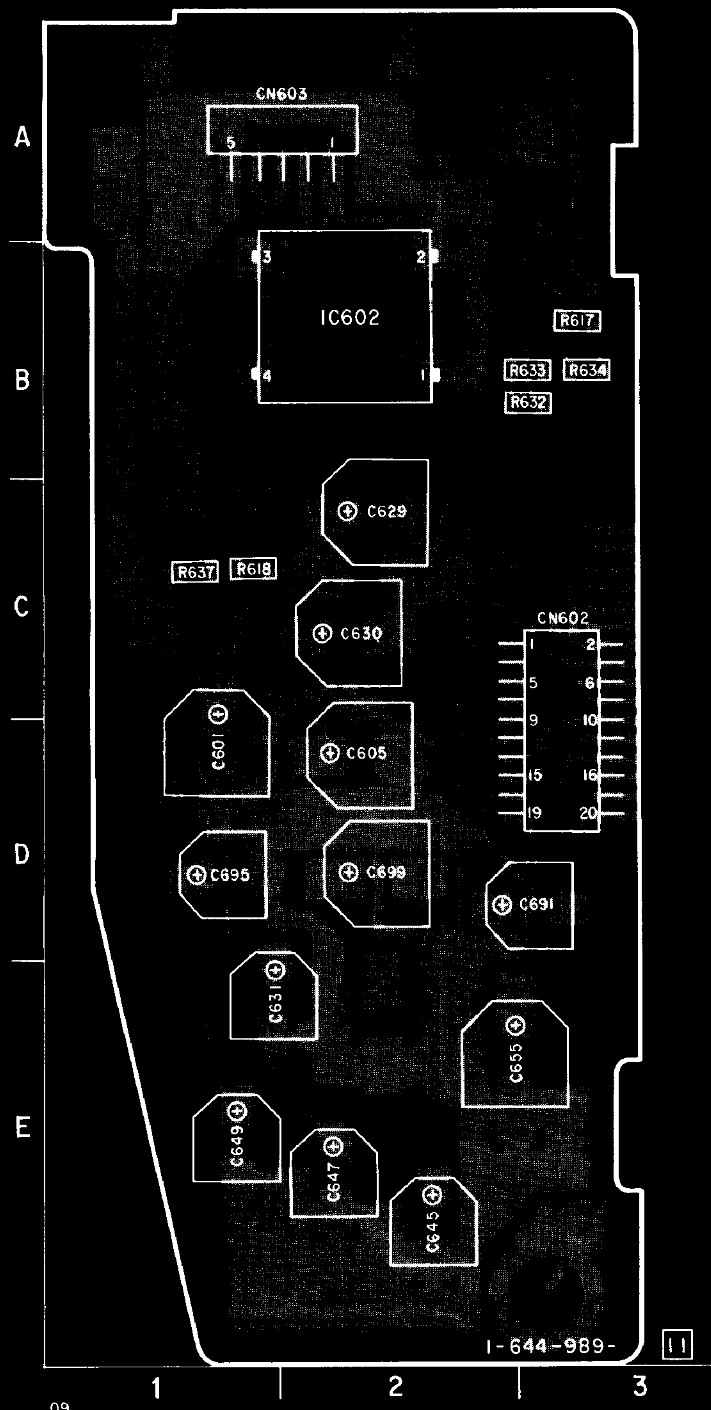
( IC )

IC551 8-759-822-37 IC LA7293M

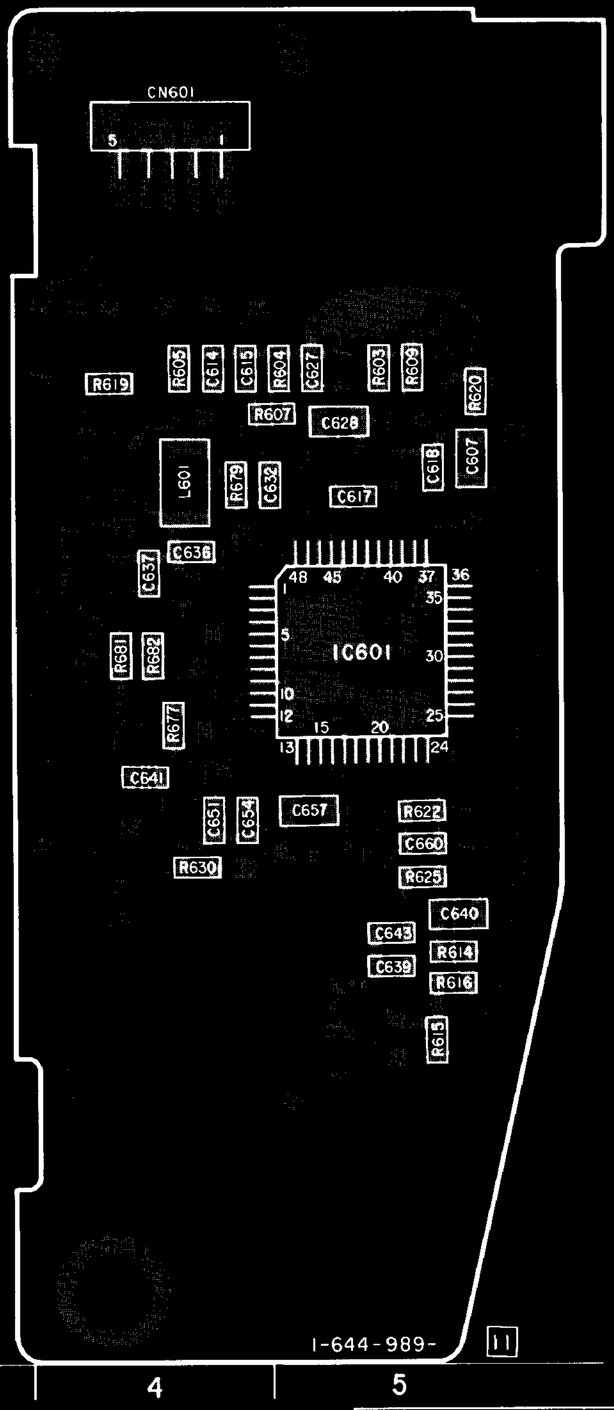
( TRANSISTOR )

Q551 8-729-402-55 TRANSISTOR 2SB1218A

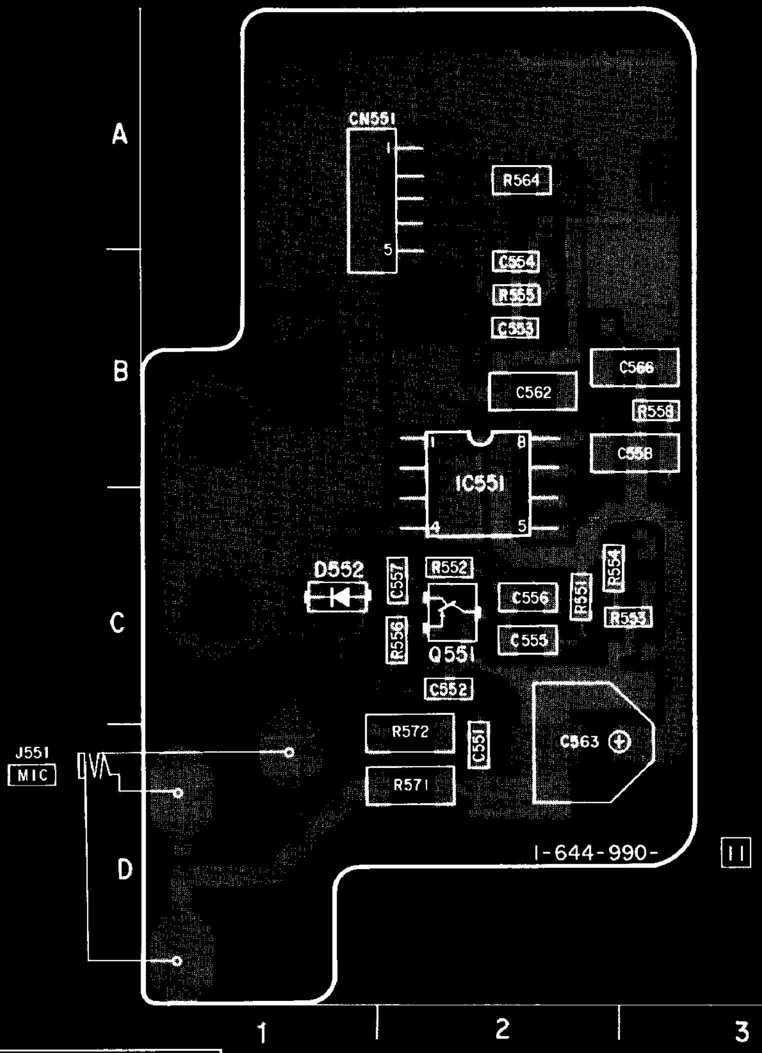
**AU-138** BOARD (COMPONENT SIDE)


CN603
5
1
IC602
3
2
4
1
R617
R633
R634
R632
C629
R637
R618
C630
CN602
1
2
5
6
9
10
15
16
19
20
C601
C605
C695
C699
C691
C631
C655
C649
C647
C645
1-644-989-
11
A
B
C
D
E
1
2
3

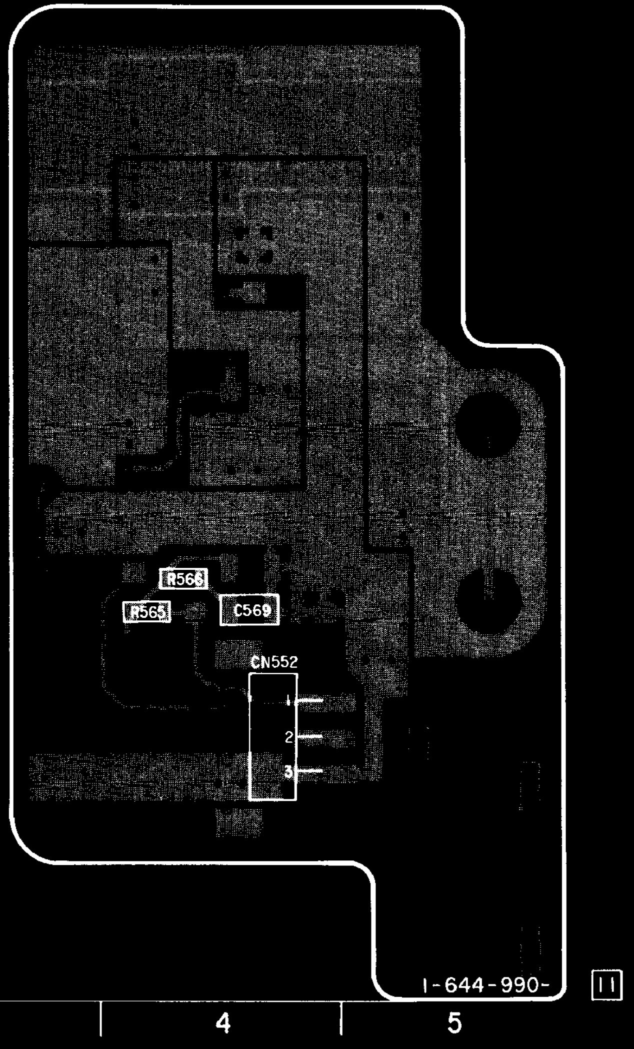
**AU-138** BOARD (CONDUCTOR SIDE)


CN601
5
1
R619
R605
C614
C615
R604
C627
R603
R609
R620
R607
C628
L601
R679
C632
C617
C618
C607
C636
C637
IC601
48
45
40
37
36
35
1
5
30
10
12
15
20
25
13
24
R681
R682
R677
C641
C651
C654
C657
R622
C660
R625
R630
C640
C643
R614
C639
R616
R615
1-644-989-
11
4
5

**MA-149** BOARD (COMPONENT SIDE)


CN551
1
5
R564
C554
R555
C553
C566
C562
R559
IC551
1
8
4
5
C558
D552
C557
R552
R554
C556
R551
R553
R556
Q551
C555
C552
R572
C563
R571
C551
J551
MIC
1-644-990-
11
A
B
C
D
1
2
3

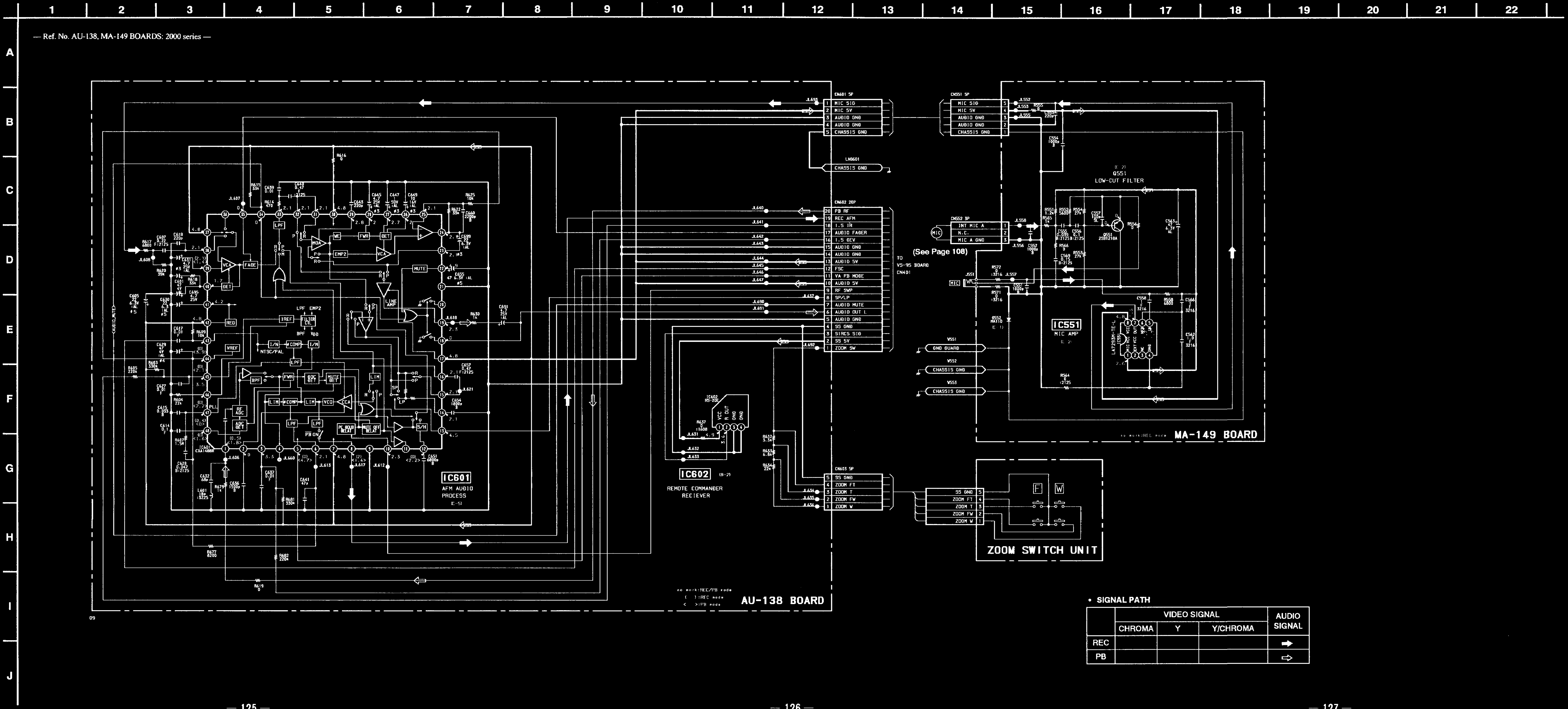
**MA-149** BOARD (CONDUCTOR SIDE)


R566
R565
C569
CN552
1
2
3
1-644-990-
11
4
5

09

## AU-138 (AFM AUDIO), MA-149 (MIC JACK, MIC AMP) SCHEMATIC DIAGRAMS

— Ref. No. AU-138, MA-149 BOARDS: 2000 series —

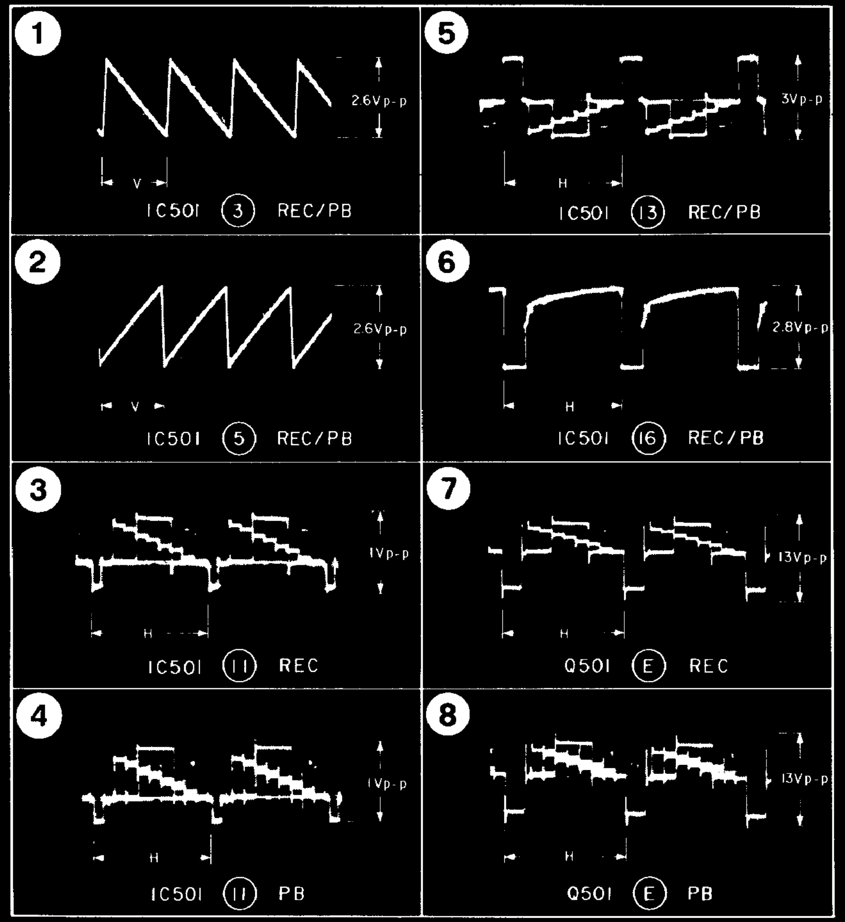


CN601 5P
1 MIC SIG
2 MIC 5V
3 AUDIO GND
4 AUDIO GND
5 CHASSIS GND
LM601
CHASSIS GND
CN602 20P
20 PB RF
19 REC AFM
18 1.5 IR
17 AUDIO FADER
16 1.5 DEV
15 AUDIO GND
14 AUDIO GND
13 AUDIO 5V
12 FSC
11 VA PB MODE
10 AUDIO 5V
9 RF SWP
8 SP/LP
7 AUDIO MUTE
6 AUDIO OUT L
5 AUDIO GND
4 SS GND
3 SIRCS SIG
2 SS 5V
1 ZOOM SW
TO VS-95 BOARD CN401
(See Page 108)
IC601 AFM AUDIO PROCESS
IC602 REMOTE COMMANDER RECIEVER
CN603 5P
5 SS GND
4 ZOOM FT
3 ZOOM T
2 ZOOM FW
1 ZOOM W
AU-138 BOARD
CN551 5P
MIC SIG
MIC 5V
AUDIO GND
AUDIO GND
CHASSIS GND
CN552 3P
INT MIC A
N.C.
MIC A GND
MIC
Q551 LOW-CUT FILTER
IC551 MIC AMP
GND GUARD
CHASSIS GND
CHASSIS GND
MA-149 BOARD
SS GND
ZOOM FT
ZOOM T
ZOOM FW
ZOOM W
F
W
ZOOM SWITCH UNIT
AU-138 BOARD

- SIGNAL PATH

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | | ➡ |
| PB | | | | ⇨ |

## VF-42 BOARD



( DIODE )

| | | | |
|---|---|---|---|
| D501 | 8-719-820-65 | DIODE | TLS221 |
| D502 | 8-719-984-02 | LED | BR4371F |
| D503 | 8-719-400-20 | DIODE | MA152WA |

( IC )

| | | | |
|---|---|---|---|
| IC501 | 8-759-420-01 | IC | AN2512S |

( TRANSISTOR )

| | | | |
|---|---|---|---|
| Q501 | 8-729-100-66 | TRANSISTOR | 2SC1623 |
| Q502 | 8-729-216-31 | TRANSISTOR | 2SA1163-G |
| ⚠Q503 | 8-729-100-66 | TRANSISTOR | 2SC1623 |
| Q504 | 8-729-106-68 | TRANSISTOR | 2SD1615A-GP |

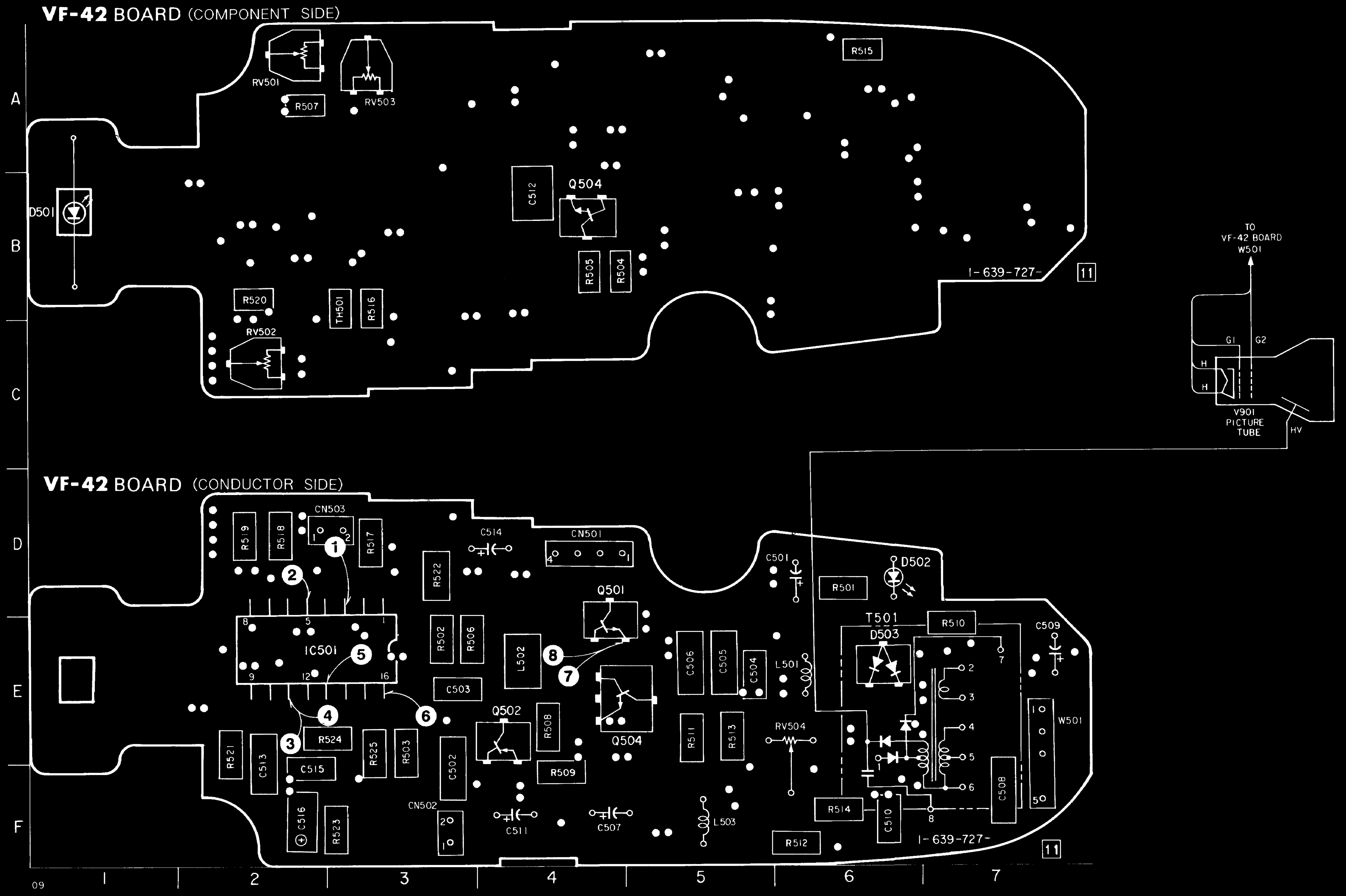
- **For printed wiring boards.**

Caution:

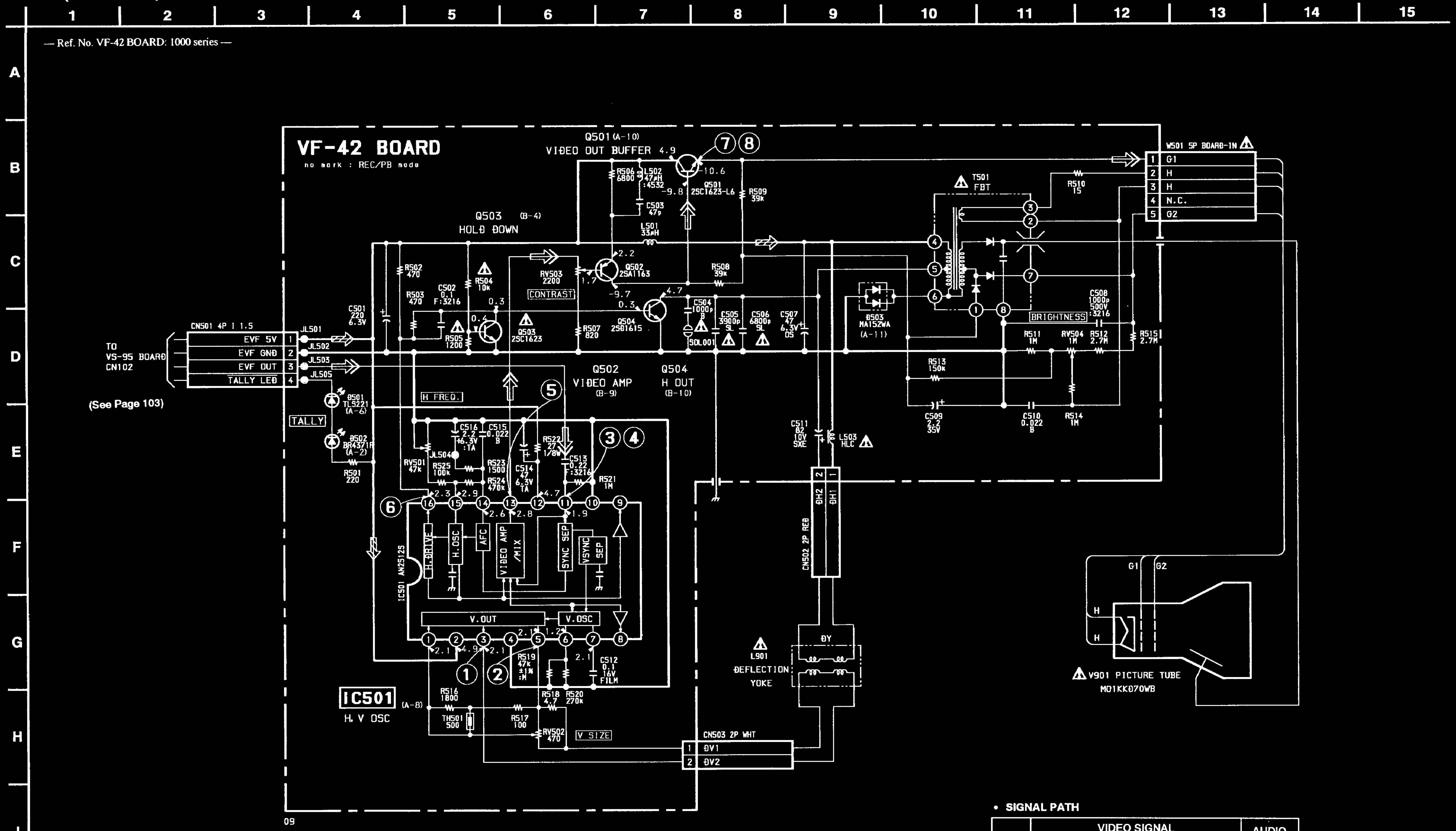
| | |
|---|---|
| Pattern face side: (Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component side) | Parts on the parts face side seen from the parts face are indicated. |

## VF-42 (VIEW FINDER) PRINTED WIRING BOARD

— Ref. No. VF-42 BOARD: 1000 series —


VF-42 BOARD (COMPONENT SIDE)
A
B
C
D
E
F
RV501
R507
RV503
R515
D501
C512
Q504
R505
R504
1-639-727-
11
R520
RV502
TH501
R516
TO
VF-42 BOARD
W501
G1
G2
H
H
V901
PICTURE
TUBE
HV
VF-42 BOARD (CONDUCTOR SIDE)
R519
R518
CN503
R517
C514
CN501
R522
C501
R501
D502
Q501
T501
D503
R510
C509
IC501
R502
R506
L502
C503
C506
C505
C504
L501
Q502
R508
Q504
R511
R513
RV504
W501
R521
C513
R524
R525
R503
C502
R509
C515
C516
R523
CN502
C511
C507
L503
R514
C510
C508
R512
1-639-727-
11
09
1
2
3
4
5
6
7

## VF-42 (VIEW FINDER) SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
— Ref. No. VF-42 BOARD: 1000 series —
VF-42 BOARD
no mark : REC/PB mode
Q501 (A-10)
VIDEO OUT BUFFER
Q503 (B-4)
HOLD DOWN
Q502
VIDEO AMP
(B-9)
Q504
H OUT
(B-10)
CONTRAST
BRIGHTNESS
H FREQ.
V SIZE
TALLY
T501
FBT
W501 5P BOARD-IN
G1
H
H
N.C.
G2
CN501 4P I 1.5
EVF 5V
EVF GND
EVF OUT
TALLY LED
TO
VS-95 BOARD
CN102
(See Page 103)
IC501 AN2512S
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
IC501
H, V OSC
(A-8)
L901
DEFLECTION
YOKE
DY
CN502 2P RED
DH2
DH1
CN503 2P WHT
DV1
DV2
V901 PICTURE TUBE
M01KK070WB
D503
MA152WA
(A-11)
L503
HLC
09

- SIGNAL PATH

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | | |
| PB | | | ⇨ | |

## DD-48 (POWER), SW-205 (CAMERA FUNCTION SWITCH) PRINTED WIRING BOARDS

— Ref. No. DD-48 BOARD: 1000 series, SW-205 BOARD: 7000 series —

- **For printed wiring boards.**
- DD-48 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

〈 DIODE 〉

| | | | |
|---|---|---|---|
| D901 | 8-719-981-59 | DIODE | FC805 |
| D905 | 8-719-404-46 | DIODE | MA110 |
| D906 | 8-719-404-46 | DIODE | MA110 |

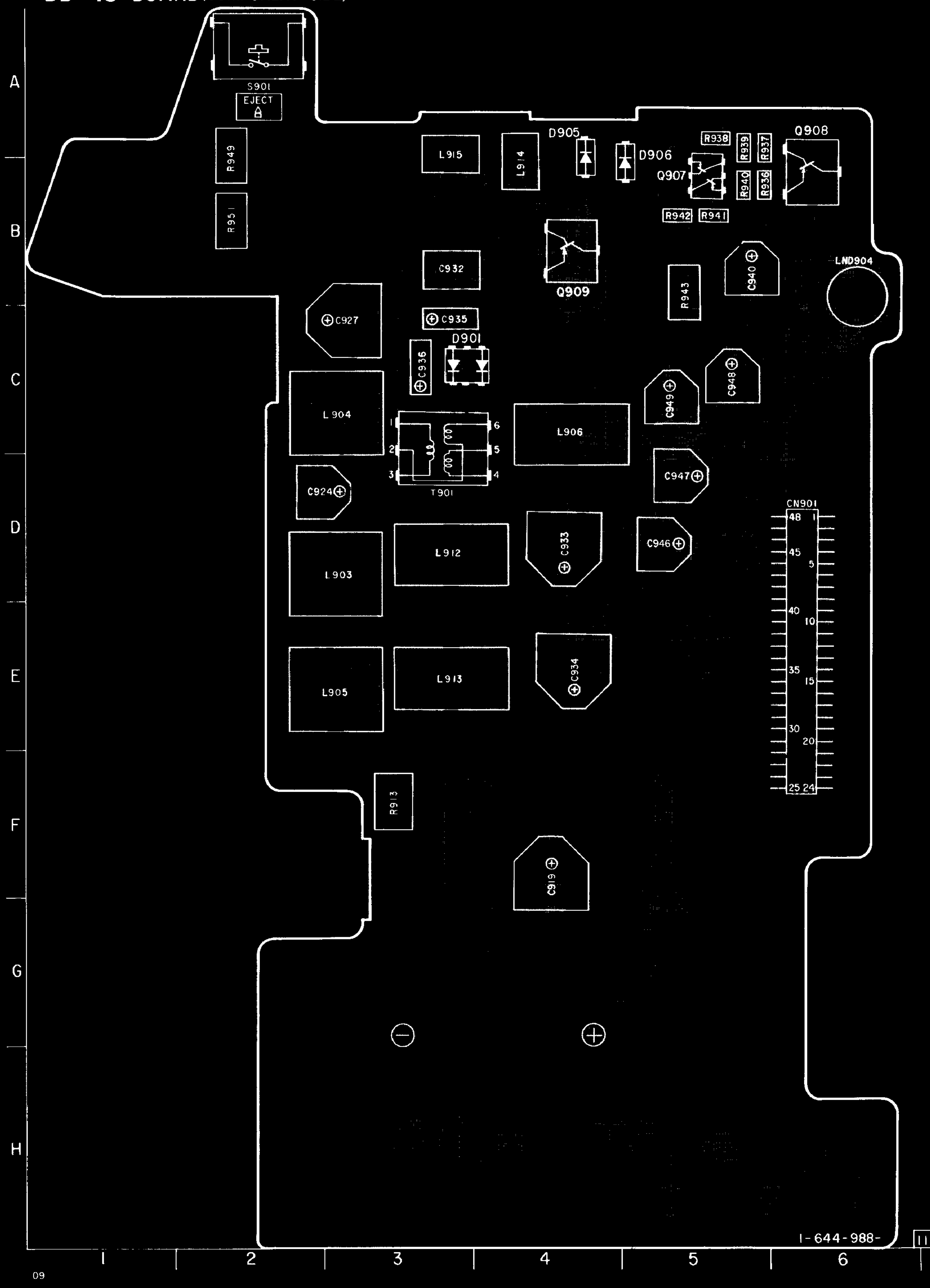
〈 IC 〉

| | | | |
|---|---|---|---|
| IC901 | 8-759-060-94 | IC | MB3785APFV-G-BND-ER |

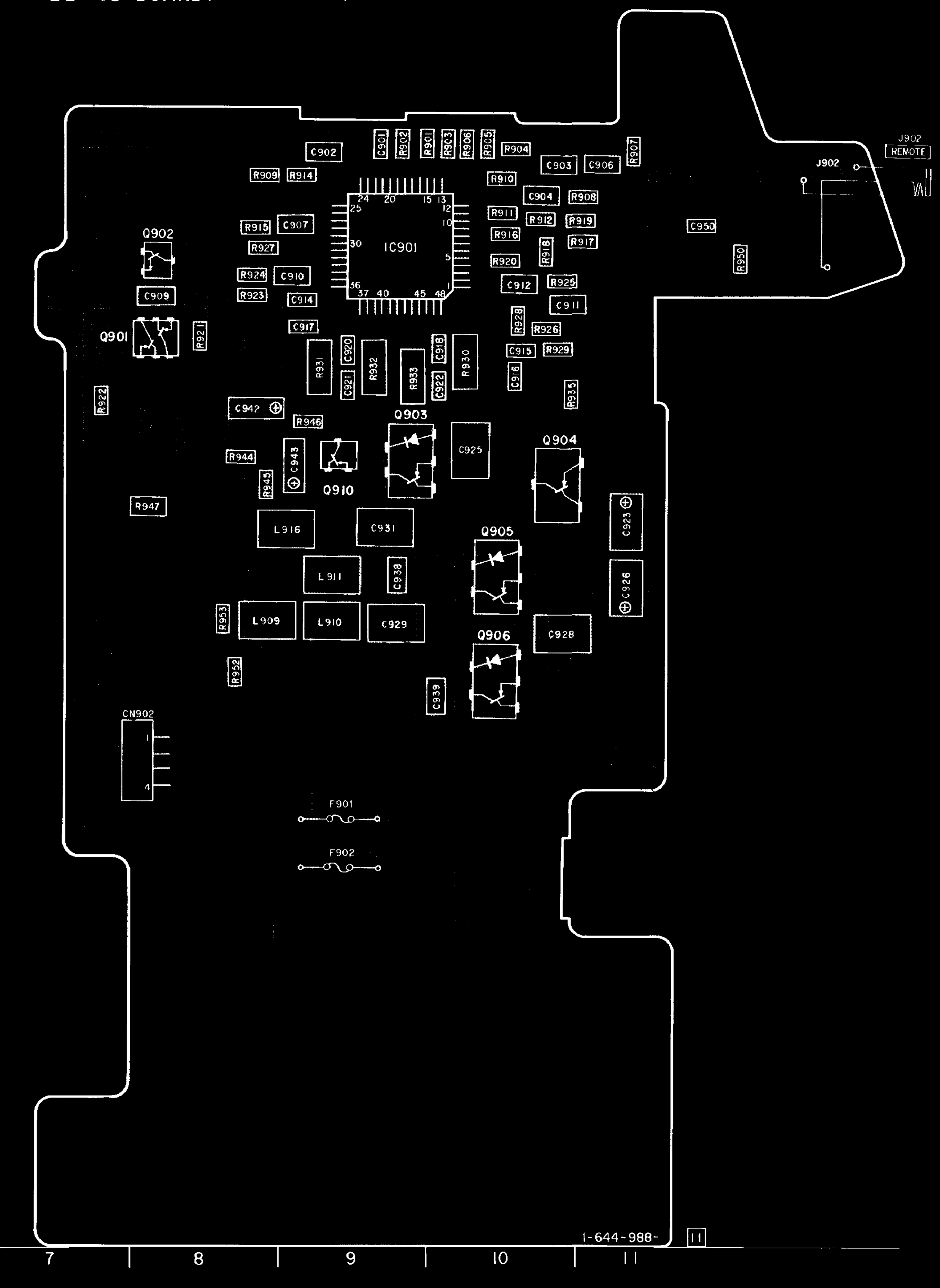
〈 TRANSISTOR 〉

| | | | |
|---|---|---|---|
| Q901 | 8-729-403-27 | TRANSISTOR | XN4401 |
| Q902 | 8-729-402-42 | TRANSISTOR | RN1304 |
| Q903 | 8-729-823-84 | TRANSISTOR | FP102 |
| Q904 | 8-729-804-41 | TRANSISTOR | 2SB1122-S |
| Q905 | 8-729-823-82 | TRANSISTOR | FP101 |
| Q906 | 8-729-823-82 | TRANSISTOR | FP101 |
| Q907 | 8-729-402-81 | TRANSISTOR | XN4501 |
| Q908 | 8-729-805-25 | TRANSISTOR | 2SB1121 |
| Q909 | 8-729-805-25 | TRANSISTOR | 2SB1121 |
| Q910 | 8-729-014-20 | TRANSISTOR | RN2304 |

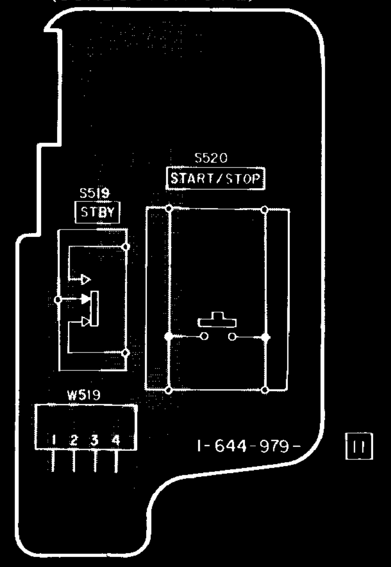
**DD-48** BOARD(COMPONENT SIDE)


A
B
C
D
E
F
G
H
1
2
3
4
5
6
09
S901
EJECT
R949
R951
L915
L914
D905
D906
Q907
R938
R939
R937
R940
R936
Q908
R942
R941
C932
Q909
R943
C940
LND904
C927
C935
D901
C936
C949
C948
L904
T901
L906
C924
C947
CN901
C946
C933
L903
L912
L905
L913
C934
R913
C919
1-644-988-
11

**DD-48** BOARD(CONDUCTOR SIDE)

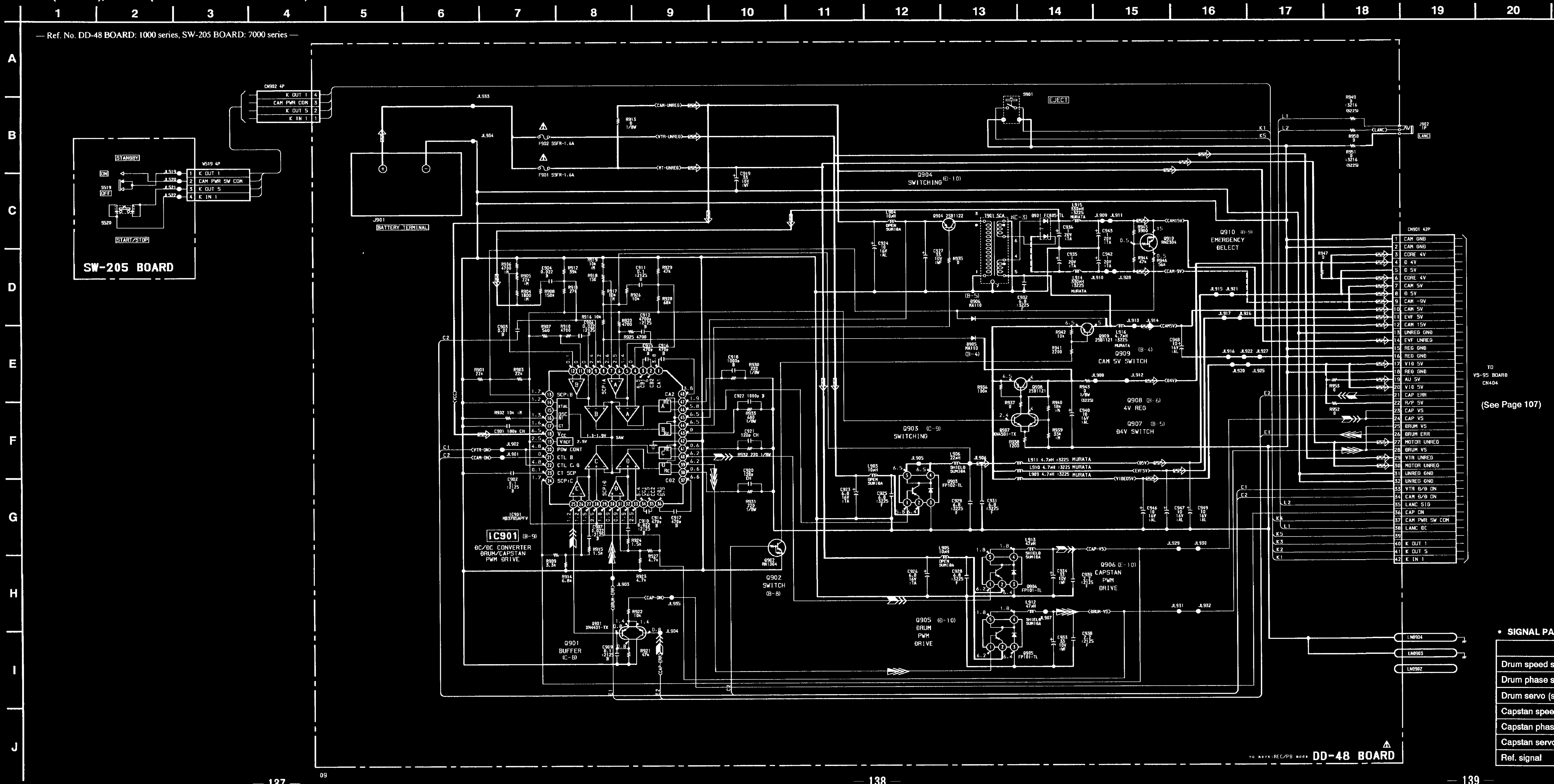

7
8
9
10
11
J902
REMOTE
C902
R909
R914
C901
R902
R901
R903
R906
R905
R904
C903
C906
R907
R910
C904
R908
R911
R912
R919
R916
R917
R915
C907
R927
IC901
R920
R918
R925
R924
C910
C912
C911
R923
C914
R928
R926
C917
C915
R929
Q902
C909
Q901
R921
R922
R931
C920
C921
R932
R933
C922
C918
R930
C916
R935
C942
R946
Q903
C925
Q904
R944
C943
R945
Q910
R947
L916
C931
C923
Q905
L911
C938
C926
R953
L909
L910
C929
C928
Q906
R952
C939
CN902
F901
F902
C950
R950
1-644-988-
11

**SW-205** BOARD
(CONDUCTOR SIDE)


S520
START/STOP
S519
STBY
W519
1 2 3 4
1-644-979-
11

## DD-48 (POWOR), SW-205 (CAMERA FUNCTION SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. DD-48 BOARD: 1000 series, SW-205 BOARD: 7000 series —


SW-205 BOARD
STANDBY
ON
S519
OFF
S520
START/STOP
W519 4P
1 K OUT 1
2 CAM PWR SW COM
3 K OUT 5
4 K IN 1
CN902 4P
K OUT 1 4
CAM PWR COM 3
K OUT 5 2
K IN 1 1
J901
BATTERY TERMINAL
F902 SSFR-1.6A
F901 SSFR-1.6A
IC901 (B-9)
DC/DC CONVERTER
DRUM/CAPSTAN
PWM DRIVE
Q901 BUFFER (C-8)
Q902 SWITCH (B-8)
Q903 (C-9) SWITCHING
Q904 (D-10) SWITCHING
Q905 (D-10) DRUM PWM DRIVE
Q906 (E-10) CAPSTAN PWM DRIVE
Q907 (B-5) 84V SWITCH
Q908 (H-6) 4V REG
Q909 (B-4) CAM 5V SWITCH
Q910 (B-9) EMERGENCY SELECT
S901 EJECT
J902 1P LANC
CN901 42P
1 CAM GND
2 CAM GND
3 CORE 4V
4 D 4V
5 D 5V
6 CORE 4V
7 CAM 5V
8 D 5V
9 CAM -9V
10 CAM 5V
11 EVF 5V
12 CAM 15V
13 UNREG GND
14 EVF UNREG
15 REG GND
16 REG GND
17 VID 5V
18 REG GND
19 AU 5V
20 VID 5V
21 CAP ERR
22 R/P 5V
23 CAP VS
24 CAP VS
25 DRUM VS
26 DRUM ERR
27 MOTOR UNREG
28 DRUM VS
29 VTR UNREG
30 MOTOR UNREG
31 UNREG GND
32 UNREG GND
33 VTR D/D ON
34 CAM D/D ON
35 LANC SIG
36 CAP ON
37 CAM PWR SW COM
38 LANC DC
39
40 K OUT 1
41 K OUT 5
42 K IN 1
TO VS-95 BOARD CN404
LND904
LND903
LND902
DD-48 BOARD

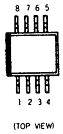
(See Page 107)

- **SIGNAL PATH**

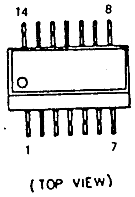
| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | | |
| Drum phase servo | | | |
| Drum servo (speed and phase) | | ⊳ | |
| Capstan speed servo | | | |
| Capstan phase servo | | | |
| Capstan servo (speed and phase) | | » | |
| Ref. signal | | | |

## 4-3. SEMICONDUCTORS

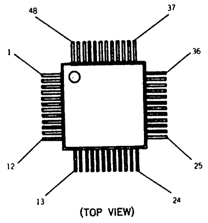
**BR9021AF**
**LM358DR**


8 7 6 5
1 2 3 4
(TOP VIEW)

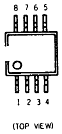
**AN2512S**


14
8
1
7
(TOP VIEW)

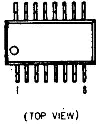
**CXA1202R**
**CXA1208R**
**CXA1481AR**
**CXA1488R**


48
37
1
36
12
25
13
24
(TOP VIEW)

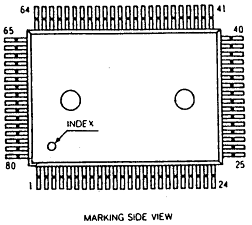
**CXA1211M**
**NJM2234M**
**NJM3414M**


8 7 6 5
1 2 3 4
(TOP VIEW)

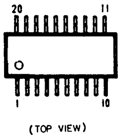
**CXA1452**
**CXL5502M**


16
9
1
8
(TOP VIEW)

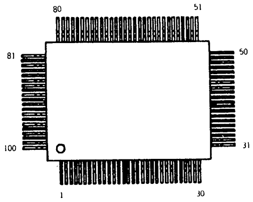
**CXD2100Q**
**μPD75316GF**


64
41
65
40
INDEX
80
25
1
24
MARKING SIDE VIEW

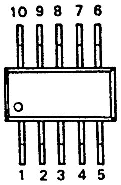
**CXD1250AN**
**CXD2104AN**
**MB88346BPFV**
**μPD7564G-540**


20
11
1
10
(TOP VIEW)

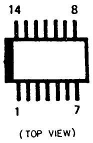
**CXP80624-416R/434R**


80
51
81
50
100
31
1
30

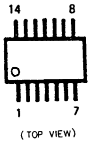
**LB1830M**


10 9 8 7 6
1 2 3 4 5

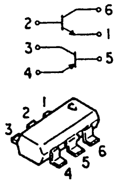
**LM324DR**


14
8
1
7
(TOP VIEW)

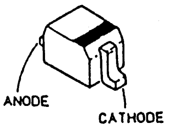
**TL1596CDB**


14
8
1
7
(TOP VIEW)

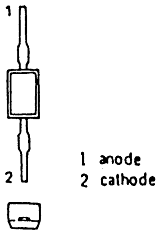
**XP4601**


2
6
1
3
5
4
1
2
3
6
5
4

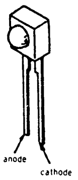
**MA110**


ANODE
CATHODE

**TLS221**


1
2
1 anode
2 cathode

**BR4371F**


anode
cathode

## 4-3. SEMICONDUCTORS

**BR9021AF**
**LM358DR**

**CXD2109Q**
**μPD75316GF**

**TL1596CDB**

14
8
1
7
(TOP VIEW)

**AN2513S**

14
8
1
7
(TOP VIEW)

**XP4601**

**CXD1259AN**
**CXD2104AN**
**MB88346BPFV**
**μPD7564G-540**

**MA110**

ANODE
CATHODE

**CXA1202R**
**CXA1206R**
**CXA1401AR**
**CXA1486R**

**CXP80624-413R/634R**

**TLS221**

1
2
1 anode
2 cathode

**CXA1211M**
**NJM2234M**
**NJM3414M**

**LB1836M**

10 9 8 7 6
1 2 3 4 5

**SR4371F**

**CXA1482**
**CXL5502M**

**LM324DR**

14
8
1
7
(TOP VIEW)

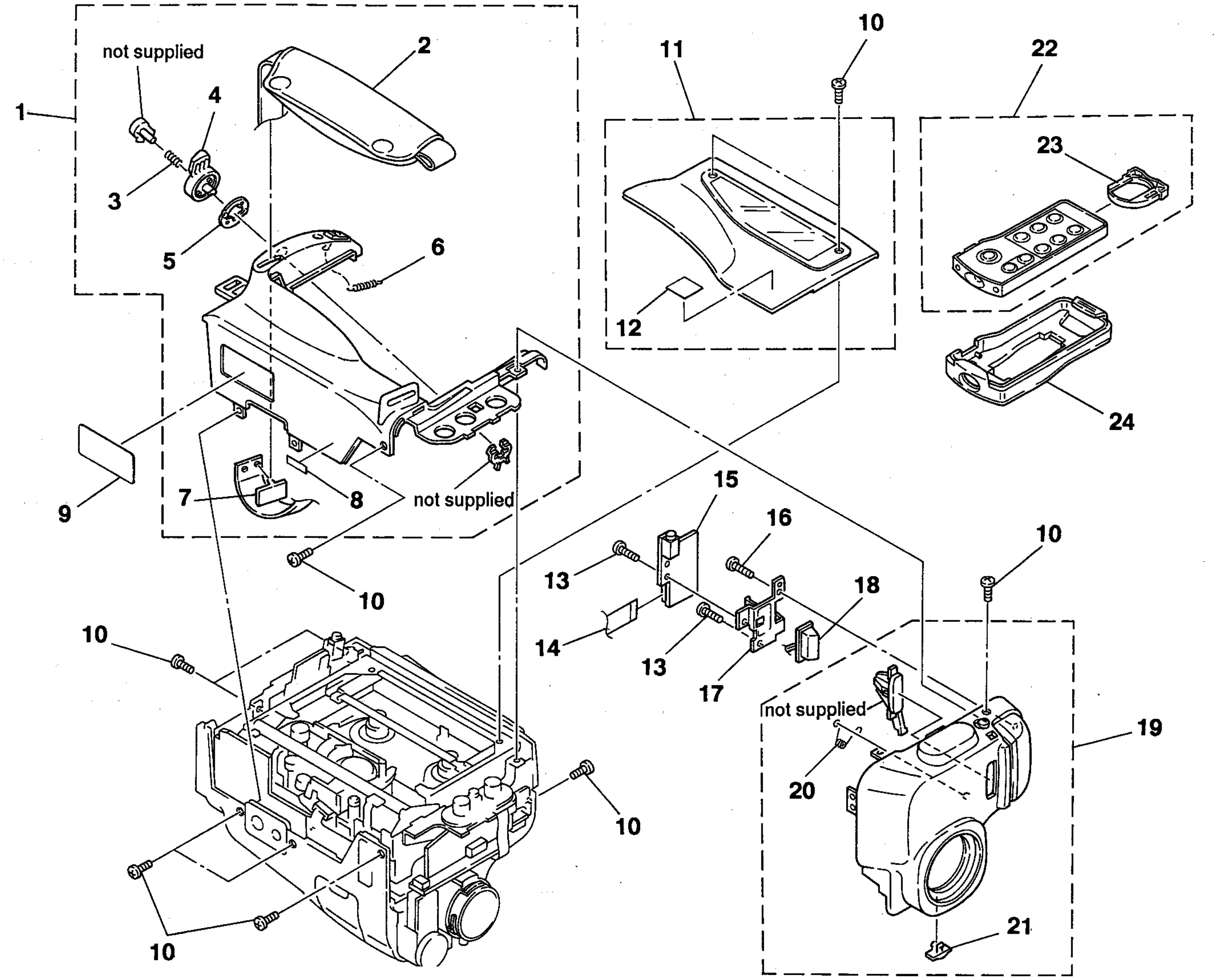
# SECTION 5
# EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

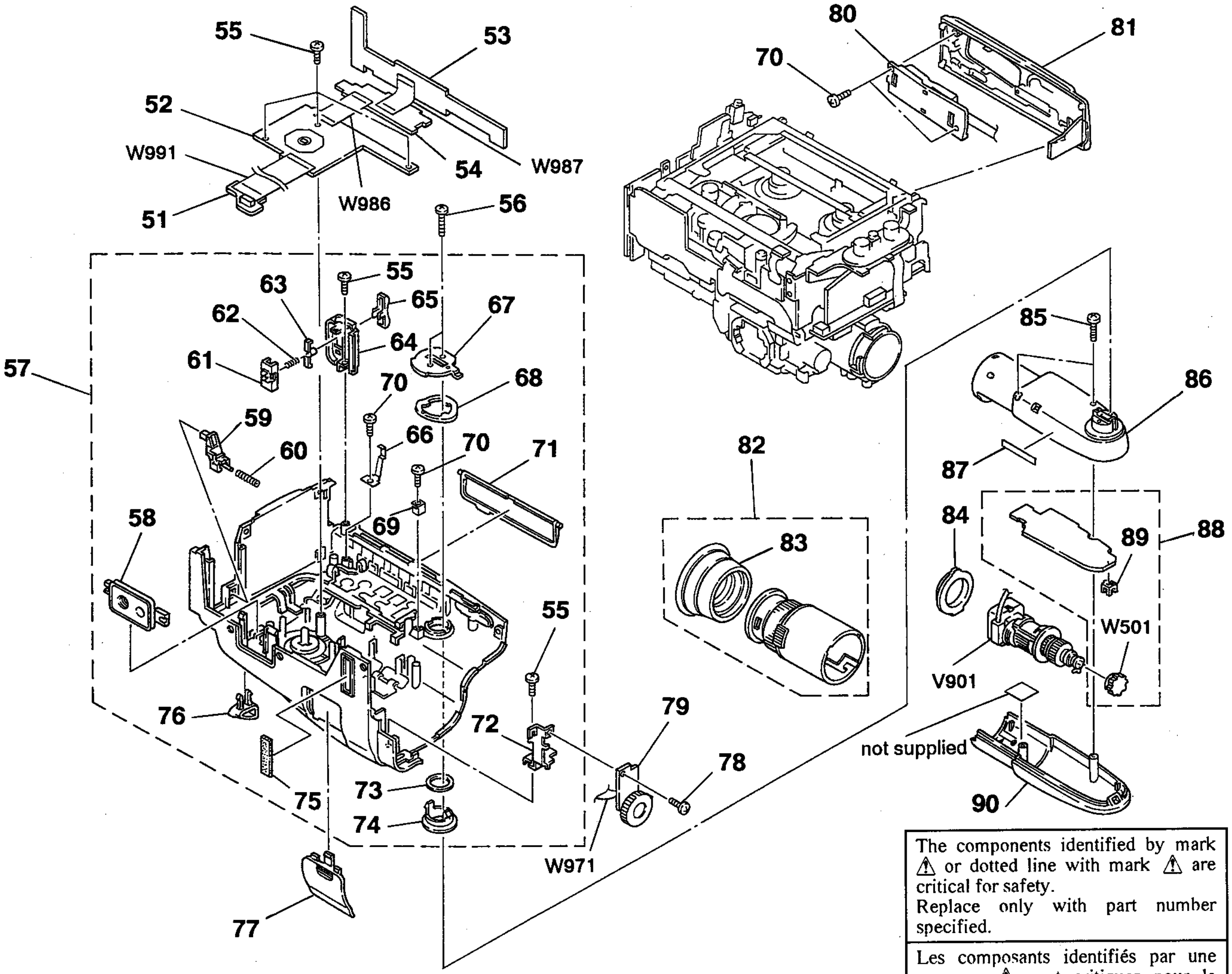
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

## 5-1. CABINET (L) AND F PANEL ASSEMBLIES



| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | X-3941-893-1 | CABINET (L) ASSY (TR31:US) | |
| 1 | X-3942-282-1 | CABINET (L) ASSY (EXCEPT TR31:US) | |
| 2 | 3-736-807-01 | BELT, GRIP | |
| 3 | 3-578-221-00 | SPRING, COMPRESSION | |
| 4 | 3-942-985-01 | KNOB, STAND-BY | |
| 5 | 3-736-364-01 | SPRING | |
| 6 | 4-602-490-00 | SPRING, TENSION | |
| 7 | 3-942-895-01 | STOPPER, BELT | |
| ∗ 8 | 3-704-367-01 | LABEL (TR31:US) | |
| ∗ 9 | 3-951-286-01 | LABEL, MODEL NUMBER (TR303/TR303PK) | |
| ∗ 9 | 3-949-003-01 | LABEL, MODEL NUMBER (U/C)(TR31) | |
| 10 | 3-719-381-01 | SCREW (M2X4) | |
| 11 | X-3942-391-1 | LID ASSY CASSETTE (TR303/TR303PK) | |
| 11 | X-3941-895-1 | LID ASSY, CASSETTE (TR31) | |
| ∗ 12 | 3-703-713-41 | STICKER, SONY SYMBOL (10) | |
| 13 | 3-713-790-21 | SCREW (M2X6), TAPPING, P3 | |
| 14 | 1-696-487-11 | CABLE, FLAT (FFC-90) | |
| 15 | A-7063-267-A | MA-149 BOARD, COMPLETE | |
| 16 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| ∗ 17 | 3-949-000-01 | RETAINER, MICROPHONE | |
| 18 | A-7091-800-A | MICROPHONE UNIT | |
| 19 | X-3941-891-1 | PANEL ASSY, F | |
| 20 | 3-947-357-01 | SPRING, TORSION | |
| 21 | 3-945-269-01 | KNOB, S | |
| 22 | 1-465-927-71 | REMOTE COMMANDER (CAM CORDER)(RMT-507) (TR31) | |
| 22 | 1-465-927-81 | REMOTE COMMANDER (CAM CORDER)(RMT-507) (TR303/TR303PK) | |
| 23 | 3-708-412-01 | LID, REMOTE COMMANDER | |
| 24 | 3-943-154-11 | HOLDER (B), REMOTE CONTROL | |

## 5-2. CABINET (R) AND EVF ASSEMBLIES

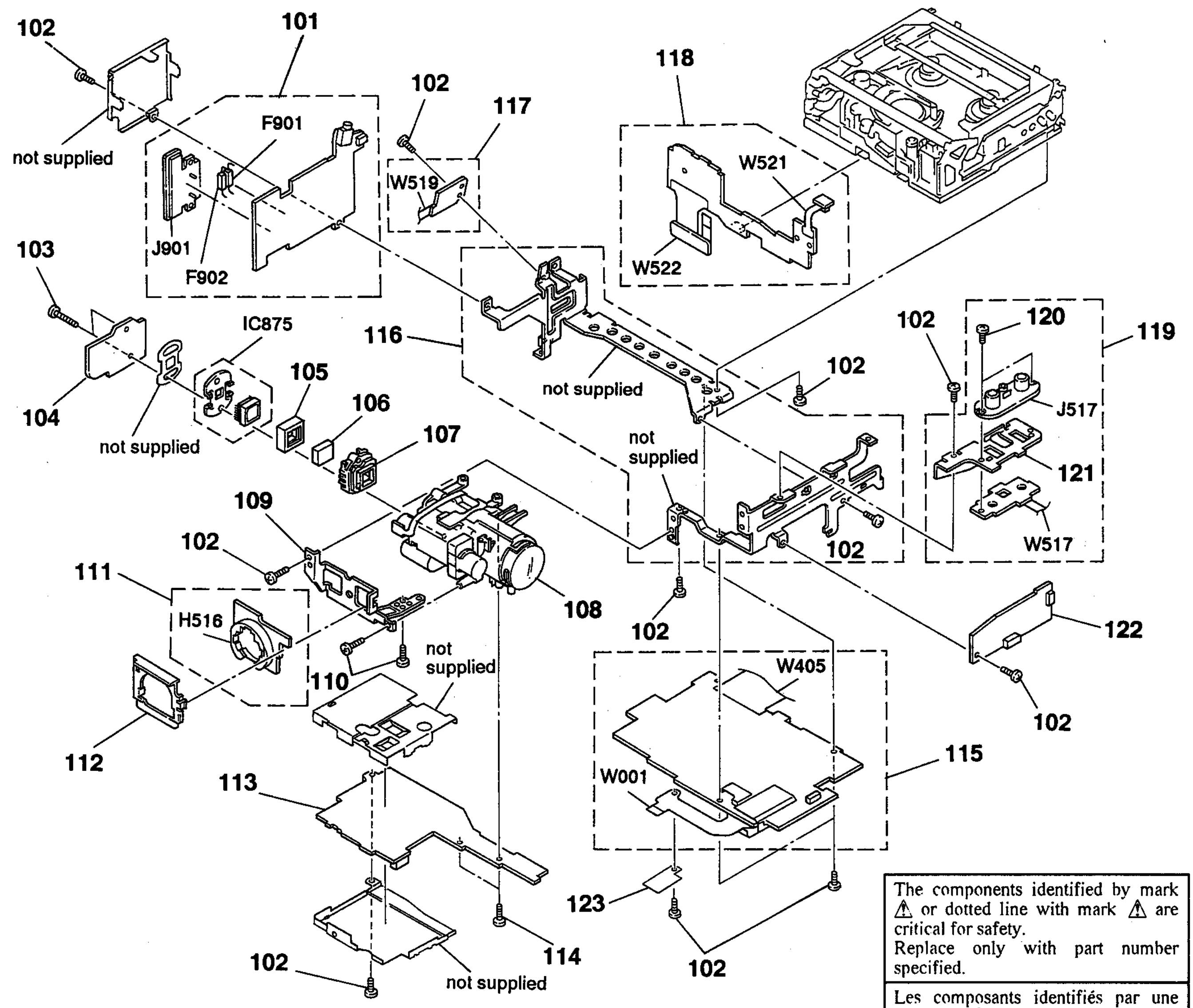


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 51 | A-7071-657-A | CN-65 BOARD, COMPLETE | |
| 52 | A-7071-655-A | CF-32 BOARD, COMPLETE | |
| 53 | A-7071-653-A | VK-27 BOARD, COMPLETE | |
| 54 | A-7071-654-A | ED-35 BOARD, COMPLETE | |
| 55 | 3-713-790-21 | SCREW (M2X6), TAPPING, P3 | |
| 56 | 3-740-546-41 | SCREW (M2X10) | |
| 57 | X-3941-892-1 | CABINET (R) ASSY | |
| 58 | 3-942-911-01 | SCREW, TRIPOD | |
| 59 | 3-948-990-01 | LOCK, BATTERY | |
| 60 | 3-426-508-00 | SPRING, COMPRESSION | |
| 61 | 3-948-839-01 | BLIND, POWER | |
| 62 | 3-303-973-00 | SPRING, COMPRESSION | |
| 63 | 3-946-186-01 | PUSH BUTTON, POWER | |
| 64 | 3-948-975-01 | POWER (BASE) | |
| 65 | 3-946-248-01 | BUTTON, POWER | |
| 66 | 3-948-988-01 | SPRING, LEAF, VK | |
| 67 | 3-747-111-01 | PLATE, LOCK, TILT | |
| 68 | 3-747-110-01 | SPRING, LEAF, TILT | |
| 69 | 3-747-178-01 | REINFORCEMENT, TILT LOCK | |
| 70 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| 71 | 3-948-976-01 | DOOR, CONTROL | |
| * 72 | 3-948-987-01 | FRAME, MF | |
| 73 | 3-747-112-01 | RING, TILT | |
| 74 | 3-747-109-01 | SLEEVE, EVF | |
| 75 | 3-949-008-01 | SHEET, FOOT | |
| 76 | 3-948-989-01 | KNOB, BATTERY | |
| 77 | X-3942-113-1 | LID ASSY, BATTERY, LITHIUM (TR31:US) | |
| 78 | 3-713-786-51 | SCREW (M2X3) | |
| 79 | A-7071-656-A | MF-191 BOARD, COMPLETE | |
| 80 | 1-692-257-11 | SWITCH, PUSH (ZOOM) | |
| 81 | X-3941-894-1 | LID ASSY, LS | |
| 82 | X-3941-603-1 | HOLDER ASSY, FINDER | |
| 83 | 3-946-426-01 | EYE CUP | |
| 84 | 3-747-116-01 | COVER, CRT | |
| 85 | 3-713-790-31 | SCREW (M2X8), TAPPING, P3 | |
| 86 | X-3940-706-1 | CABINET (L) ASSY, EVF | |
| * 87 | 3-744-894-11 | LABEL, EVF | |
| 88 | A-7063-183-A | VF-42 BOARD, COMPLETE (3120) | |
| 89 | 3-942-888-01 | HOLDER, LED | |
| 90 | 3-943-077-01 | CABINET (R), EVF | |
| ⚠V901 | 1-452-565-11 | CRT ASSY | |
| ⚠W501 | 1-540-019-21 | SOCKET ASSY, CRT | |
| W971 | 1-696-484-11 | CABLE, FLAT (FFC-87) | |
| W986 | 1-696-621-11 | CABLE FLEXIBLE | |
| W987 | 1-696-622-11 | CABLE FLEXIBLE (FP-591) | |
| W991 | 1-696-483-11 | CABLE FLAT (FFC-86) | |

## 5-3. MAIN BOARDS ASSEMBLY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W519
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J901
F902
IC875
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not supplied
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J517
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not supplied
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supplied
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W405
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W001
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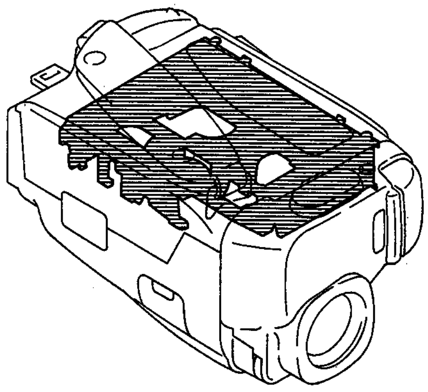
not supplied

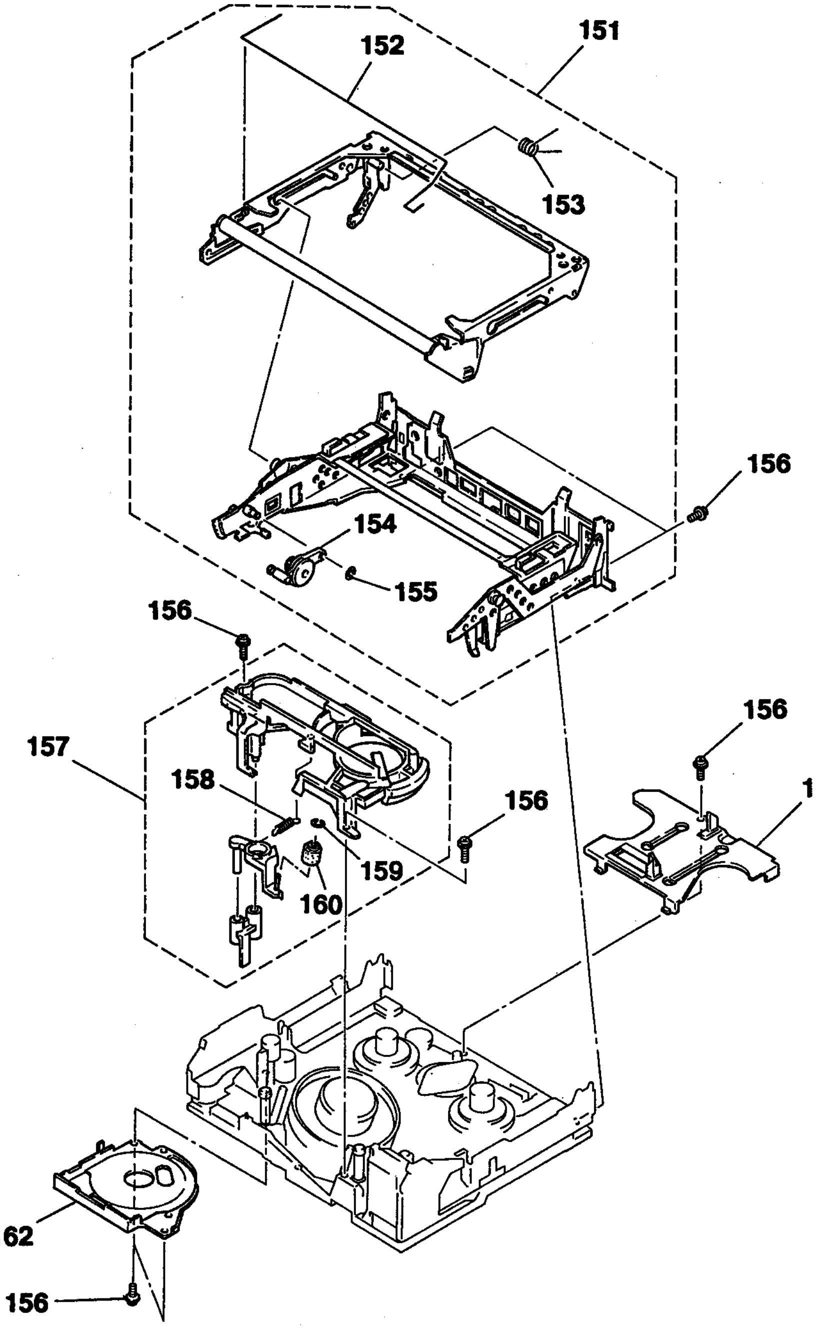
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 101 | A-7063-264-A | DD-48 BOARD, COMPLETE | |
| 102 | 3-713-786-51 | SCREW (M2X3) | |
| 103 | 3-947-268-01 | SCREW (B TIGHT) (2), TAPPING | |
| 104 | A-7063-262-A | CD-92 BOARD, COMPLETE | |
| 105 | 3-946-857-01 | RUBBER (S), SEAL | |
| 106 | 1-547-558-21 | FILTER BLOCK, OPTICAL | |
| 107 | 3-946-856-01 | ADAPTOR (H), CCD FITTING | |
| 108 | 1-547-548-11 | LENS, ZOOM (VCL-6210WC) | |
| * 109 | 3-949-001-01 | FRAME, LENS | |
| 110 | 3-713-790-21 | SCREW (M2X6), TAPPING, P3 | |
| 111 | A-7071-652-A | LI-44 BOARD, COMPLETE | |
| 112 | 3-948-842-01 | HOLDER, LI | |
| 113 | A-7063-261-A | VC-122 BOARD, COMPLETE | |
| 114 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| 115 | A-7063-260-A | VS-95 BOARD, COMPLETE | |
| * 116 | X-3942-209-1 | FRAME (UPPER LOWER) ASSY | |
| 117 | A-7071-651-A | SW-205 BOARD, COMPLETE | |
| 118 | A-7063-263-A | SL-27 BOARD, COMPLETE | |
| 119 | A-7063-266-A | JK-91 BOARD, COMPLETE | |
| 120 | 3-719-381-01 | SCREW (M2X4) | |
| * 121 | 3-948-974-01 | FRAME (M), JACK | |
| 122 | A-7063-265-A | AU-138 BOARD, COMPLETE | |
| 123 | 3-951-136-01 | SHIELD, DRUM | |
| ⚠F901 | 1-532-778-21 | FUSE | |
| ⚠F902 | 1-532-778-21 | FUSE | |
| H516 | 1-550-104-32 | HOLDER, BATTERY | |
| J517 | 1-537-142-21 | TERMINAL BOARD | |
| J901 | 1-537-281-41 | TERMINAL BOARD | |
| W001 | 1-696-489-11 | CABLE, FLEXIBLE (FP-588) | |
| W405 | 1-644-285-11 | FP-572 FLEXIBLE BOARD | |
| W517 | 1-696-482-11 | CABLE, FLAT (FFC-85) | |
| W519 | 1-696-488-11 | CABLE, FLAT (FFC-92) | |
| W521 | 1-642-186-11 | FP-437 FLEXIBLE BOARD | |
| W522 | 1-696-490-11 | CABLE, FLEXIBLE (FP-589) | |
| IC875 | A-7030-368-A | CCD BLOCK ASSY (AUTO) | |

## 5-4. CASSETTE COMPARTMENT ASSEMBLY

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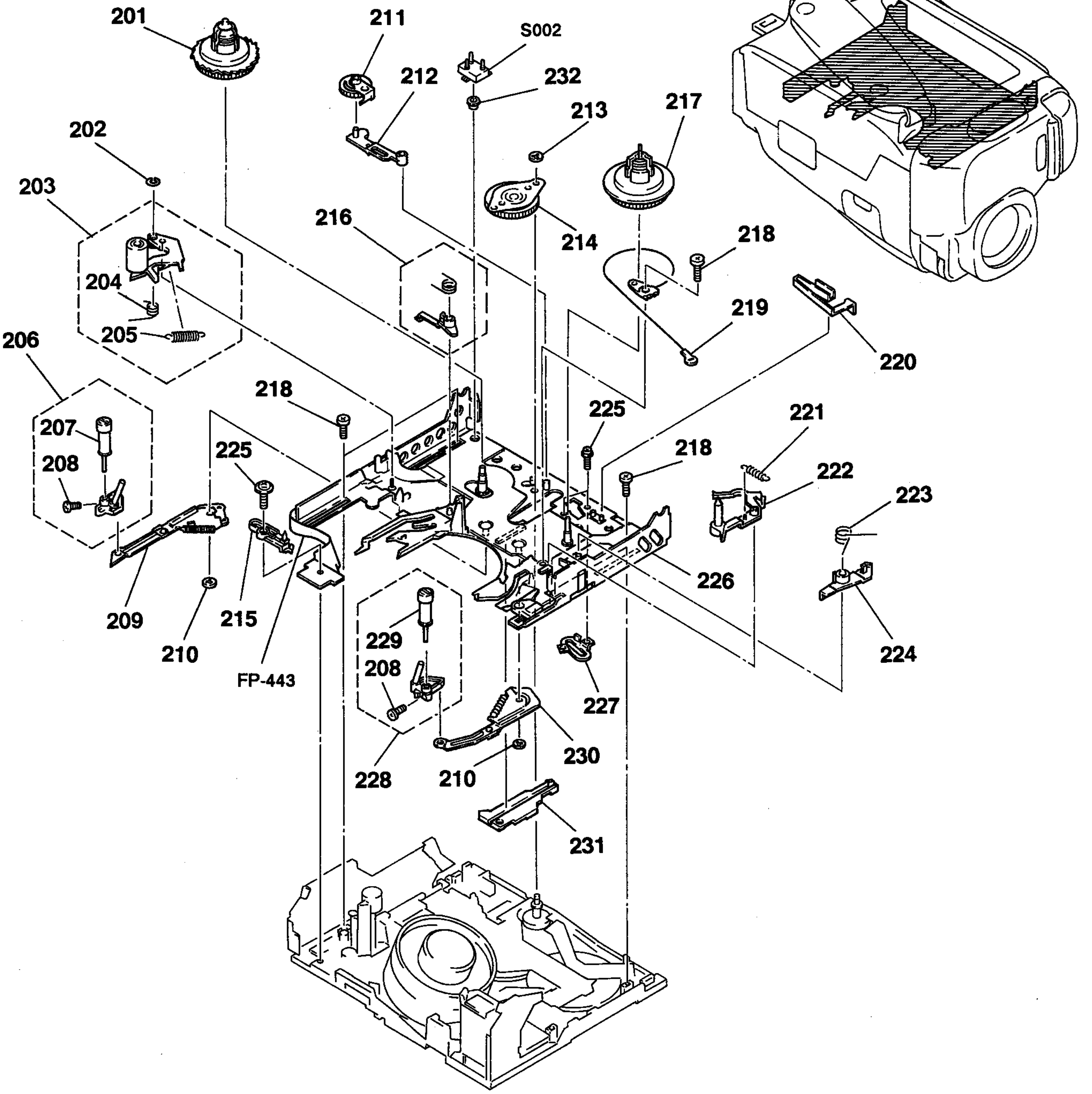
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 151 | A-7040-312-A | CASSETTE COMPARTMENT BLOCKASSY | |
| 152 | 3-945-773-01 | BAR, TORSION | |
| 153 | 3-945-771-01 | SPRING, TORSION | |
| 154 | X-3941-287-2 | DAMPER ASSY | |
| 155 | 3-315-384-31 | WASHER, STOPPER | |
| 156 | 3-947-503-01 | SCREW (M1.4X2.5) | |
| 157 | A-7040-309-A | PROTECT (BASE) BLOCK ASSY | |
| 158 | 3-945-760-01 | SPRING, TENSION | |
| 159 | 3-321-393-01 | WASHER, STOPPER | |
| 160 | X-3726-817-3 | ROLLER ASSY, HC | |
| 161 | X-3941-280-1 | RETAINER ASSY, GOOSENECK | |
| 162 | 3-945-733-01 | COVER, CAPSTAN | |

## 5-5. LS CHASSIS ASSEMBLY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FP-443
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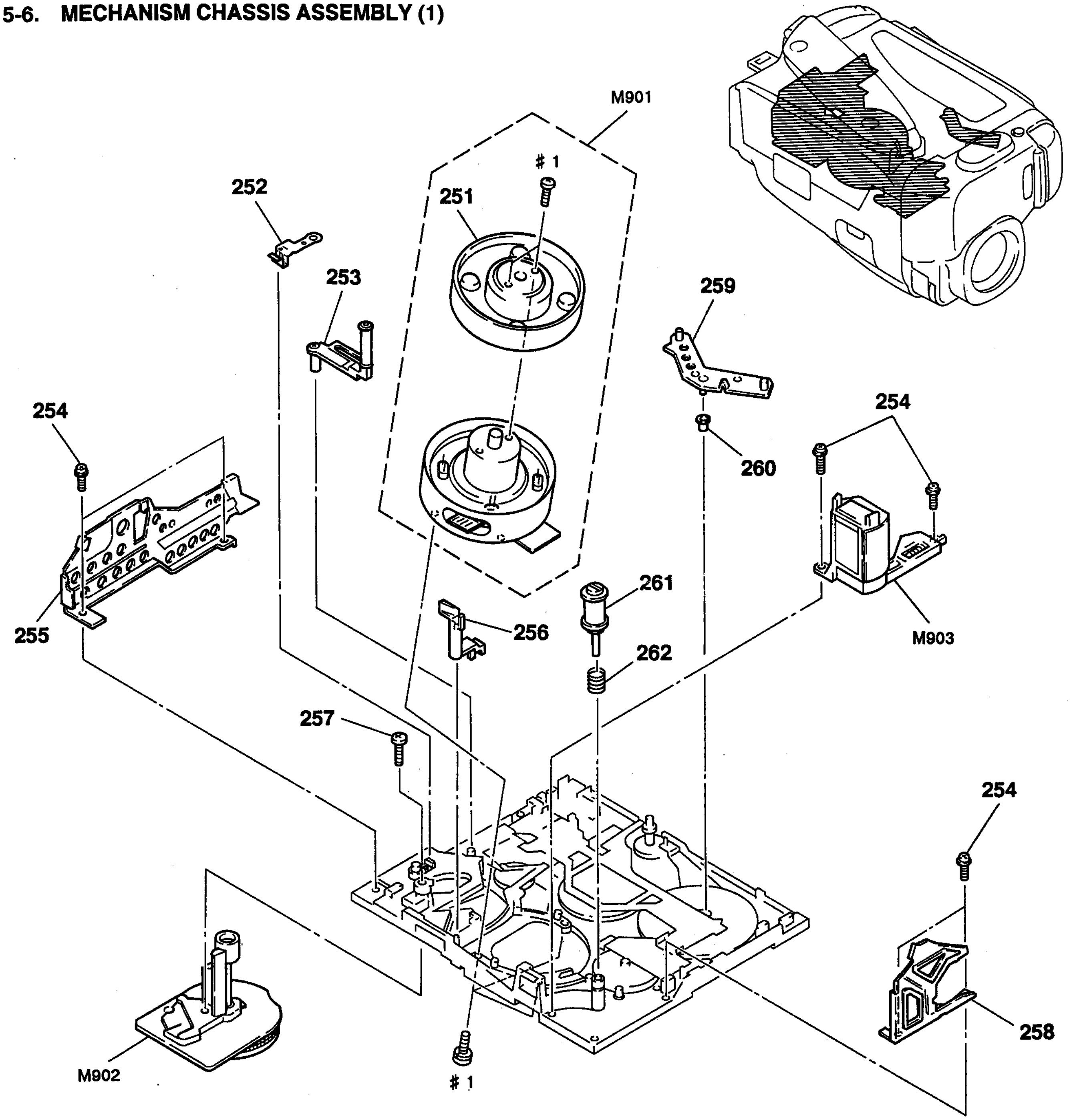
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 201 | X-3941-274-1 | TABLE ASSY, REEL, T | |
| 202 | 3-331-007-21 | WASHER | |
| 203 | X-3941-271-1 | ARM ASSY, PINCH | |
| 204 | 3-945-743-01 | SPRING, TORSION | |
| 205 | 3-945-783-01 | SPRING, TENSION | |
| 206 | A-7040-307-A | GUIDE (BASE) (T) BLOCK ASSY | |
| 207 | X-3941-424-1 | ROLLER ASSY, TG6 | |
| 208 | 3-947-504-01 | SCREW (M1. 2X2) | |
| 209 | X-3941-267-1 | ARM (T) ASSY, GUIDE | |
| 210 | 3-669-465-00 | WASHER (1. 5), STOPPER | |
| 211 | X-3941-273-1 | SOFT ASSY, T | |
| 212 | 3-945-753-01 | ARM, T SOFT | |
| 213 | 3-726-829-01 | WASHER, STOPPER | |
| 214 | X-3941-279-1 | GEAR ASSY, GOOSENECK | |
| 215 | 3-947-644-01 | RETAINER, TG5 (BASE) | |
| 216 | A-7040-321-A | CLAW BLOCK ASSY, T HARD | |
| 217 | X-3941-275-1 | TABLE ASSY, REEL, S | |
| 218 | 3-945-756-01 | SCREW (M1. 4X3) | |
| 219 | X-3941-277-1 | STRING BLOCK ASSY | |
| 220 | 3-945-801-01 | BRAKE, S SOFT | |
| 221 | 3-948-810-01 | SPRING, TENSION | |
| 222 | X-3941-276-1 | TG1 ASSY | |
| 223 | 3-945-752-01 | SPRING, TORSION | |
| 224 | 3-945-799-01 | BRAKE, S HARD | |
| 225 | 3-947-503-01 | SCREW (M1. 4X2. 5) | |
| 226 | X-3941-265-1 | CHASSIS ASSY, LS | |
| 227 | 3-945-784-01 | PLATE, CAM, LS | |
| 228 | A-7040-306-A | GUIDE (BASE) (S) BLOCK ASSY | |
| 229 | X-3942-129-1 | ROLLER ASSY (SUS), TG3 | |
| 230 | X-3941-266-1 | ARM (S) ASSY, GUIDE | |
| 231 | 3-945-837-01 | SLIDER, GL | |
| 232 | 3-949-881-01 | SLEEVE | |
| S002 | 1-572-987-11 | SWITCH, PUSH (3KEY) (REC PROOF, ME/MP, MP/MP-HG) | |

## 5-6. MECHANISM CHASSIS ASSEMBLY (1)


M901
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M903
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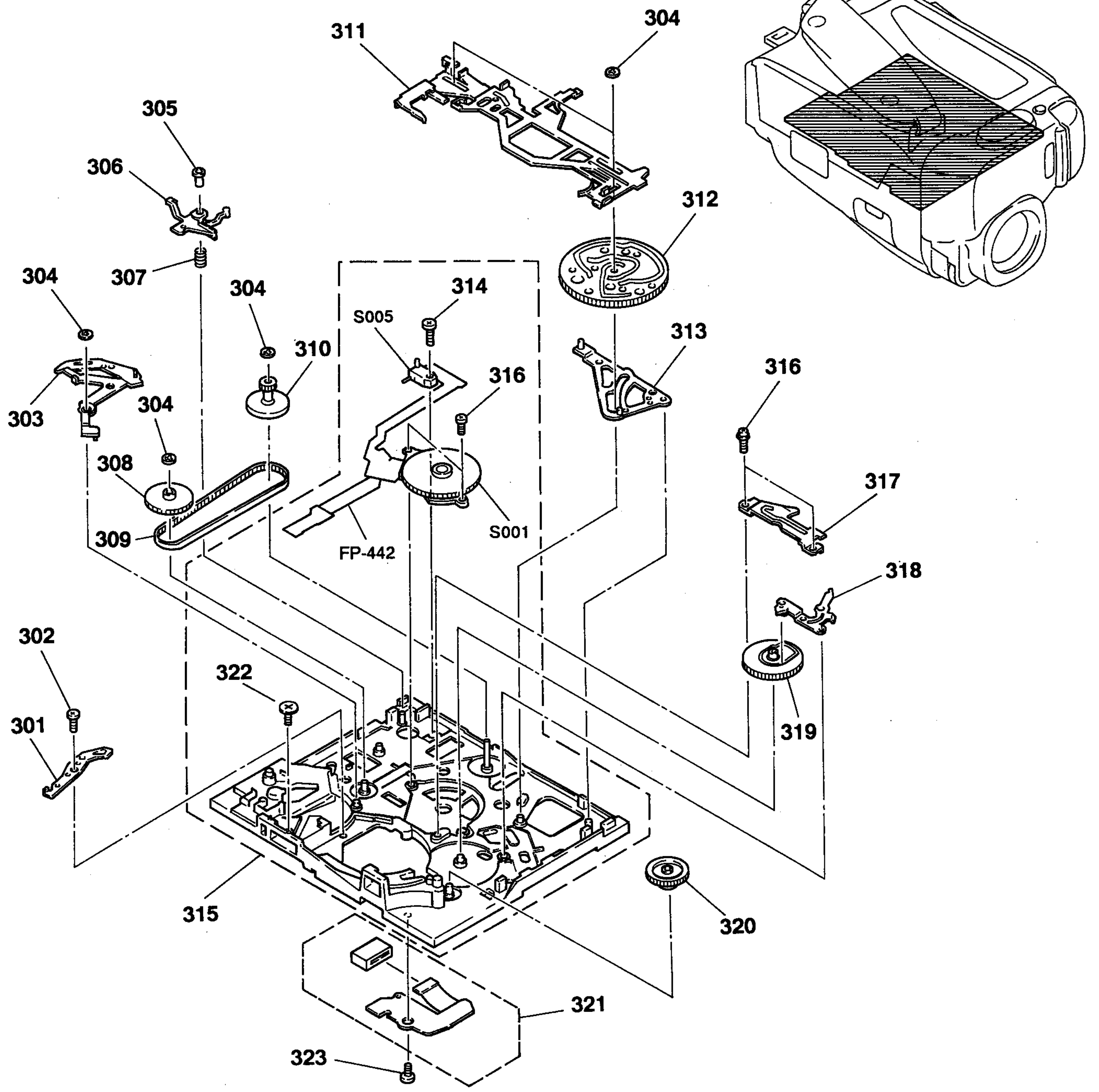
M902
# 1

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 251 | A-7049-501-A | DRUM ASSY, UPPER (DGR-78-R) | |
| 252 | 3-945-822-01 | SPRING, LEAF, TG7 ARM | |
| 253 | A-7040-305-A | ARM BLOCK ASSY, TG7 | |
| 254 | 3-947-503-01 | SCREW (M1.4X2.5) | |
| 255 | X-3941-255-1 | PLATE (T) ASSY, SIDE | |
| 256 | 3-945-735-01 | ARM, HC CONVERSION | |
| 257 | 3-713-786-71 | SCREW (M2X5) | |
| 258 | 3-945-691-01 | PLATE (S), SIDE | |
| 259 | 3-945-701-01 | ARM, LS | |
| 260 | 3-945-702-01 | ROLLER, LS | |
| 261 | X-3941-262-1 | ROLLER ASSY, TG2 | |
| 262 | 3-945-774-01 | SPRING, COMPRESSION | |
| M901 | A-7048-564-A | DRUM ASSY (DGH-78A-R) | |
| M902 | 8-835-477-01 | MOTOR, DC SCE-0101A (CAPSTAN) | |
| M903 | A-7040-304-A | MOTOR BLOCK ASSY, LM (LOADING) | |

## 5-7. MECHANISM CHASSIS ASSEMBLY (2)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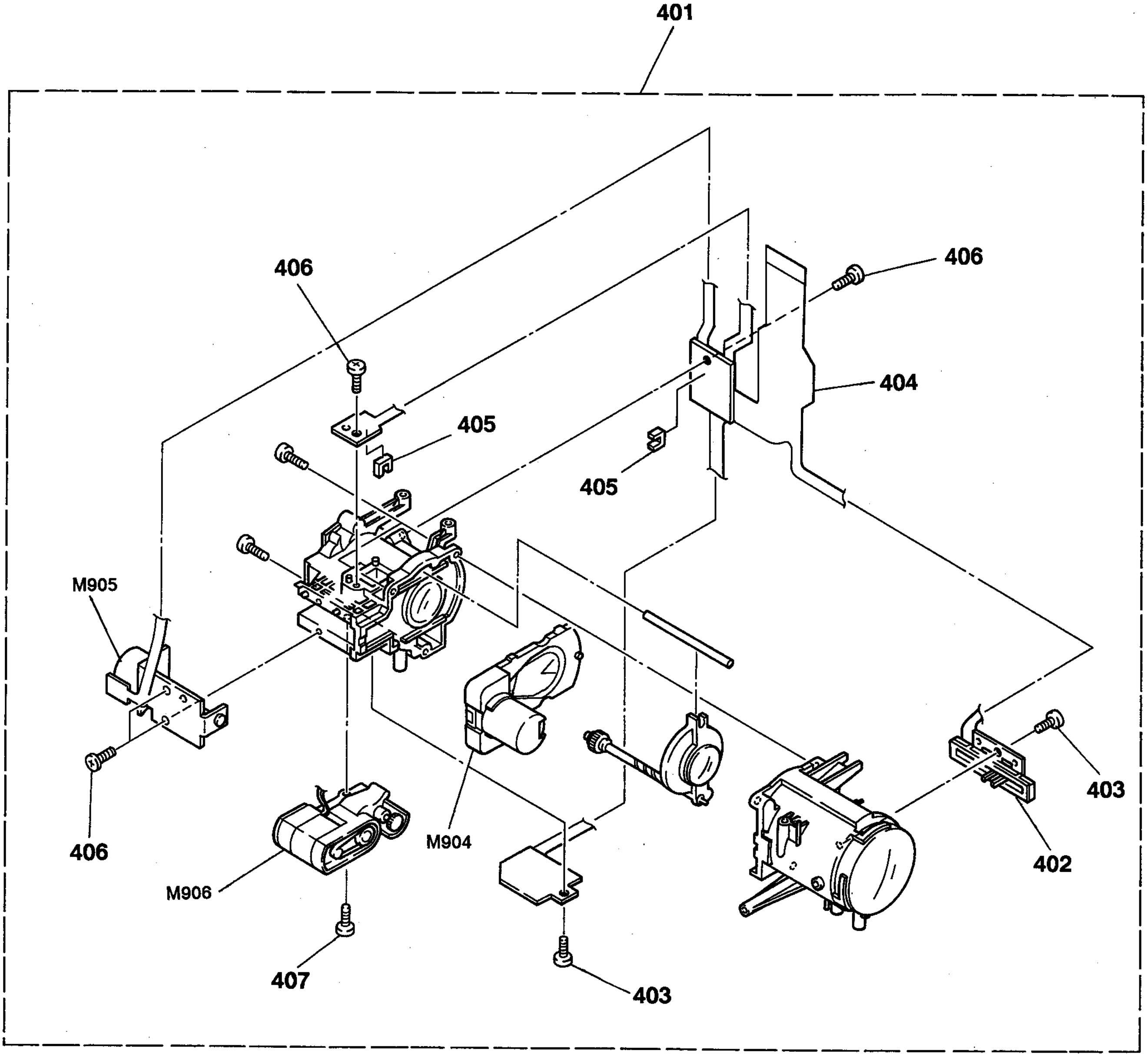
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 301 | 3-945-734-01 | ARM, HC DRIVING | |
| 302 | 3-728-103-11 | SCREW (M1.4X1.6), SPECIAL HEAD | |
| 303 | X-3941-259-1 | ARM ASSY, PINCH PRESS | |
| 304 | 3-726-829-01 | WASHER, STOPPER | |
| 305 | 3-945-730-01 | SLEEVE, EJECT | |
| 306 | 3-945-706-01 | LEVER, EJECT | |
| 307 | 3-945-729-01 | SPRING, COMPRESSION | |
| 308 | X-3941-256-1 | GEAR ASSY, CHANGE | |
| 309 | 3-944-539-01 | BELT, RELAY | |
| 310 | 3-945-695-01 | PULLEY, RELAY | |
| 311 | X-3941-260-1 | SLIDER ASSY, M | |
| 312 | 3-945-696-01 | CAM | |
| 313 | X-3941-258-1 | ARM ASSY, GL | |
| 314 | 3-713-786-71 | SCREW (M2X5) | |
| 315 | A-7040-303-A | CHASSIS ASSY, MECHANICAL | |
| 316 | 3-947-503-01 | SCREW (M1.4X2.5) | |
| 317 | 3-945-722-01 | RETAINER, GEAR | |
| 318 | X-3941-257-1 | ARM ASSY, FF | |
| 319 | 3-945-697-01 | GEAR (B), L | |
| 320 | 3-945-700-01 | GEAR (A), L | |
| 321 | A-7040-311-A | FP-444 ASSY | |
| 322 | 3-946-848-01 | SCREW, TG6 ADJUSTMENT | |
| 323 | 3-945-756-01 | SCREW (M1.4X3) | |
| S001 | 1-572-986-11 | SWITCH, ROTARY (ENCODER) | |
| S005 | 1-570-771-21 | SWITCH (C DOWN) | |

## 5-8. ZOOM LENS ASSEMBLY (VCL-6210WC)


401
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406
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M905
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M906
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M904
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403
402

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 401 | 1-547-548-11 | LENS, ZOOM (VCL-6210WC) | |
| 402 | 3-708-446-01 | METER, POTENTIAL | |
| 403 | 3-708-053-01 | SCREW, FB FITTING | |
| 404 | 3-708-493-01 | FLEXIBLE | |
| 405 | 3-708-435-01 | PHOTO INTERRUPTER | |
| 406 | 3-707-946-01 | SCREW | |
| 407 | 3-708-450-01 | SCREW, PZ | |
| M904 | 3-708-494-01 | METER ASSY, IG (IRIS) | |
| M905 | 3-708-491-01 | MOTOR ASSY, STEPPING (FOCUS) | |
| M906 | 3-708-492-01 | MOTOR ASSY, PZ (ZOOM) | |

# SECTION 6
# ELECTRICAL PARTS LIST

**AU-138** **CD-92**

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7063-265-A | AU-138 BOARD, COMPLETE<br>********************** | |
| | | ( CAPACITOR ) | |
| C601 | 1-126-607-11 | ELECT CHIP 47uF 20% 4V | |
| C605 | 1-124-778-00 | ELECT CHIP 22uF 20% 6.3V | |
| C607 | 1-164-222-11 | CERAMIC CHIP 0.22uF 25V | |
| C614 | 1-164-156-11 | CERAMIC CHIP 0.1uF 25V | |
| C615 | 1-164-373-11 | CERAMIC CHIP 0.033uF 25V | |
| C617 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C618 | 1-162-957-11 | CERAMIC CHIP 220PF 5% 50V | |
| C627 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C628 | 1-163-809-11 | CERAMIC CHIP 0.047uF 10% 25V | |
| C629 | 1-126-607-11 | ELECT CHIP 47uF 20% 4V | |
| C630 | 1-124-778-00 | ELECT CHIP 22uF 20% 6.3V | |
| C631 | 1-128-006-11 | ELECT CHIP 4.7uF 20% 25V | |
| C632 | 1-162-951-11 | CERAMIC CHIP 68PF 5% 50V | |
| C636 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C637 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C639 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C640 | 1-164-005-11 | CERAMIC CHIP 0.47uF 25V | |
| C641 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | |
| C643 | 1-162-957-11 | CERAMIC CHIP 220PF 5% 50V | |
| C645 | 1-128-006-11 | ELECT CHIP 4.7uF 20% 25V | |
| C647 | 1-128-013-11 | ELECT CHIP 1uF 20% 50V | |
| C649 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C651 | 1-162-969-11 | CERAMIC CHIP 0.0068uF 10% 25V | |
| C654 | 1-162-977-11 | CERAMIC CHIP 0.0018uF 10% 50V | |
| C655 | 1-126-205-11 | ELECT CHIP 47uF 20% 6.3V | |
| C657 | 1-164-005-11 | CERAMIC CHIP 0.47uF 25V | |
| C660 | 1-162-966-11 | CERAMIC CHIP 0.0022uF 10% 50V | |
| C691 | 1-128-006-11 | ELECT CHIP 4.7uF 20% 25V | |
| C695 | 1-128-006-11 | ELECT CHIP 4.7uF 20% 25V | |
| C699 | 1-124-778-00 | ELECT CHIP 22uF 20% 6.3V | |
| | | ( CONNECTOR ) | |
| CN601 | 1-566-537-11 | CONNECTOR, FPC (NON ZIF) 5P | |
| CN602 | 1-573-338-11 | CONNECTOR, BOARD TO BOARD 20P | |
| CN603 | 1-566-537-11 | CONNECTOR, FPC (NON ZIF) 5P | |
| | | ( IC ) | |
| IC601 | 8-759-823-19 | IC CXA1488RR | |
| IC602 | 8-749-923-29 | IC RS-20E-T | |
| | | ( COIL ) | |
| L601 | 1-410-384-31 | INDUCTOR CHIP 18uH | |
| | | ( RESISTOR ) | |
| R603 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R604 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R605 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |
| R607 | 1-216-859-11 | METAL GLAZE 1.5M 5% 1/16W | |
| R609 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R614 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R615 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R616 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R617 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R618 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R619 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R620 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R622 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R625 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R630 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R632 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R633 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R634 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R637 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R677 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | |
| R679 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R681 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R682 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7063-262-A | CD-92 BOARD, COMPLETE<br>********************** | |
| | | ( CAPACITOR ) | |
| C875 | 1-135-214-21 | TANTAL. CHIP 4.7uF 20% 20V | |
| C876 | 1-128-013-11 | ELECT CHIP 1uF 20% 50V | |
| C877 | 1-128-008-11 | ELECT CHIP 3.3uF 20% 35V | |
| C879 | 1-162-637-11 | CERAMIC CHIP 0.47uF 16V | |
| C880 | 1-135-091-00 | TANTALUM CHIP 1uF 20% 16V | |
| C881 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C882 | 1-126-607-11 | ELECT CHIP 47uF 20% 4V | |
| C883 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C884 | 1-164-156-11 | CERAMIC CHIP 0.1uF 25V | |
| C888 | 1-135-210-11 | TANTALUM CHIP 4.7uF 20% 10V | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( CONNECTOR ) | |
| CN875 | 1-573-308-11 | CONNECTOR, BOARD TO BOARD 16P | |
| | | ( DIODE ) | |
| D875 | 8-719-800-76 | DIODE 1SS226 | |
| D876 | 8-719-404-46 | DIODE MA110 | |
| D877 | 8-719-820-05 | DIODE 1SS181 | |
| D878 | 8-719-404-46 | DIODE MA110 | |
| | | ( COIL ) | |
| L875 | 1-412-064-11 | INDUCTOR CHIP 100uH | |
| | | ( TRANSISTOR ) | |
| Q875 | 8-729-425-64 | TRANSISTOR 2SD2216Q | |
| Q876 | 8-729-427-72 | TRANSISTOR XP4501 | |
| Q877 | 8-729-232-86 | TRANSISTOR 2SK1875 | |
| | | ( RESISTOR ) | |
| R877 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R878 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R879 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R880 | 1-216-843-11 | METAL CHIP 68K 5% 1/16W | |
| R881 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R882 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |
| R883 | 1-216-835-11 | METAL CHIP 15K 5% 1/16W | |
| R884 | 1-216-850-11 | METAL CHIP 270K 5% 1/16W | |
| R885 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R886 | 1-216-809-11 | METAL CHIP 100 5% 1/16W | |
| R887 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | |

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A-7071-655-A CF-32 BOARD COMPLETE
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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( CONNECTOR ) | |
| CN993 | 1-566-540-11 | CONNECTOR, FPC (NON ZIF) 8P | |
| | | ( DIODE ) | |
| D992 | 8-719-404-46 | DIODE MA110 | |
| | | ( RESISTOR ) | |
| R991 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R992 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| | | ( SWITCH ) | |
| S991 | 1-692-111-11 | SWITCH, KEY BOARD (FADER) | |
| S993 | 1-692-111-11 | SWITCH, KEY BOARD (DATE) | |
| S995 | 1-692-111-11 | SWITCH, KEY BOARD (COUNTER RESET) | |
| S996 | 1-692-111-11 | SWITCH, KEY BOARD (TIME) | |
| S997 | 1-692-024-21 | SWITCH, ROTARY (PROGRAM AE) | |
| | | ( SPEAKER ) | |
| SP991 | 1-529-107-11 | BUZZER, PIEZOELECTRIC | |

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A-7071-657-A CN-65 BOARD COMPLETE
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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( CONNECTOR ) | |
| CN518 | 1-573-310-11 | CONNECTOR, BOARD TO BOARD 20P | |
| | | ( FLAT CABLE ) | |
| W991 | 1-696-483-11 | CABLE, FLAT (FFC-86) | |

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*⚠ A-7063-264-A DD-48 BOARD, COMPLETE
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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( CAPACITOR ) | |
| C901 | 1-164-218-11 | CERAMIC CHIP 180PF 0.25PF 50V | |
| C902 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C903 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C904 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C906 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C907 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C909 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C910 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C911 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C912 | 1-163-017-00 | CERAMIC CHIP 0.0047uF 5% 50V | |
| C914 | 1-162-962-11 | CERAMIC CHIP 470PF 10% 50V | |
| C915 | 1-162-962-11 | CERAMIC CHIP 470PF 10% 50V | |
| C916 | 1-162-962-11 | CERAMIC CHIP 470PF 10% 50V | |
| C917 | 1-162-962-11 | CERAMIC CHIP 470PF 10% 50V | |
| C918 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C919 | 1-128-530-11 | ELECT CHIP 33uF 20% 10V | |
| C920 | 1-162-928-11 | CERAMIC CHIP 120PF 5% 50V | |
| C921 | 1-162-928-11 | CERAMIC CHIP 120PF 5% 50V | |
| C922 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C923 | 1-135-215-21 | TANTAL. CHIP 6.8uF 20% 16V | |
| C924 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C925 | 1-164-836-11 | CERAMIC CHIP 6.8uF 16V | |
| C926 | 1-135-215-21 | TANTAL. CHIP 6.8uF 20% 16V | |
| C927 | 1-128-530-11 | ELECT CHIP 33uF 20% 10V | |
| C928 | 1-164-836-11 | CERAMIC CHIP 6.8uF 16V | |
| C929 | 1-165-178-11 | CERAMIC CHIP 6.8uF 16V | |
| C931 | 1-165-178-11 | CERAMIC CHIP 6.8uF 16V | |
| C932 | 1-165-178-11 | CERAMIC CHIP 6.8uF 16V | |

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|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C933 | 1-128-530-11 | ELECT CHIP 33uF 20% 10V | |
| C934 | 1-128-530-11 | ELECT CHIP 33uF 20% 10V | |
| C935 | 1-135-177-21 | TANTALUM CHIP 1uF 20% 20V | |
| C936 | 1-135-177-21 | TANTALUM CHIP 1uF 20% 20V | |
| C938 | 1-164-505-11 | CERAMIC CHIP 2.2uF 16V | |
| C939 | 1-164-505-11 | CERAMIC CHIP 2.2uF 16V | |
| C940 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C942 | 1-135-177-21 | TANTALUM CHIP 1uF 20% 20V | |
| C943 | 1-135-177-21 | TANTALUM CHIP 1uF 20% 20V | |
| C946 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C947 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C948 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C949 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C950 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| | | ( CONNECTOR ) | |
| CN901 | 1-695-324-11 | CONNECTOR, BOARD TO BOARD 42P | |
| CN902 | 1-573-506-41 | CONNECTOR, FPC (NON ZIF) 4P | |
| | | ( DIODE ) | |
| D901 | 8-719-981-59 | DIODE FC805 | |
| D905 | 8-719-404-46 | DIODE MA110 | |
| D906 | 8-719-404-46 | DIODE MA110 | |
| | | ( FUSE ) | |
| ⚠F901 | 1-532-778-21 | FUSE, MICRO 1.6A 125V | |
| ⚠F902 | 1-532-778-21 | FUSE, MICRO 1.6A 125V | |
| | | ( IC ) | |
| IC901 | 8-759-060-94 | IC MB3785APFV-G-BND-ER | |
| | | ( JACK ) | |
| J901 | 1-537-281-41 | TERMINAL BOARD (BATTERY TERMINAL) | |
| J902 | 1-565-276-21 | JACK, ULTRA SMALL 1P (REMOTE) | |
| | | ( COIL ) | |
| L903 | 1-424-522-21 | COIL, CHOKE 10uH | |
| L904 | 1-424-522-21 | COIL, CHOKE 10uH | |
| L905 | 1-424-522-21 | COIL, CHOKE 10uH | |
| L906 | 1-424-523-21 | COIL, CHOKE 22uH | |
| L909 | 1-412-028-11 | INDUCTOR CHIP 4.7uH | |
| L910 | 1-412-028-11 | INDUCTOR CHIP 4.7uH | |
| L911 | 1-412-028-11 | INDUCTOR CHIP 4.7uH | |
| L912 | 1-424-524-21 | COIL, CHOKE 47uH | |
| L913 | 1-424-524-21 | COIL, CHOKE 47uH | |
| L914 | 1-412-034-11 | INDUCTOR CHIP 330uH | |
| L915 | 1-412-034-11 | INDUCTOR CHIP 330uH | |
| L916 | 1-412-028-11 | INDUCTOR CHIP 4.7uH | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( TRANSISTOR ) | |
| Q901 | 8-729-403-27 | TRANSISTOR XN4401 | |
| Q902 | 8-729-402-42 | TRANSISTOR RN1304 | |
| Q903 | 8-729-823-84 | TRANSISTOR FP102 | |
| Q904 | 8-729-804-41 | TRANSISTOR 2SB1122-S | |
| Q905 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q906 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q907 | 8-729-402-81 | TRANSISTOR XN4501 | |
| Q908 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q909 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q910 | 8-729-014-20 | TRANSISTOR RN2304 | |
| | | ( RESISTOR ) | |
| R901 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R902 | 1-218-716-11 | METAL CHIP 10K 0.50% 1/16W | |
| R903 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R904 | 1-218-698-11 | METAL CHIP 1.8K 0.50% 1/16W | |
| R905 | 1-218-724-11 | METAL CHIP 22K 0.50% 1/16W | |
| R906 | 1-218-708-11 | METAL CHIP 4.7K 0.50% 1/16W | |
| R907 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R908 | 1-216-847-11 | METAL CHIP 150K 5% 1/16W | |
| R909 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R910 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R911 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R912 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R913 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| R914 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R915 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R916 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R917 | 1-218-716-11 | METAL CHIP 10K 0.50% 1/16W | |
| R918 | 1-216-811-11 | METAL CHIP 150 5% 1/16W | |
| R919 | 1-218-716-11 | METAL CHIP 10K 0.50% 1/16W | |
| R920 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R921 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R922 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R923 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R924 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R925 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R926 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R927 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R928 | 1-216-843-11 | METAL CHIP 68K 5% 1/16W | |
| R929 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R930 | 1-216-182-00 | METAL GLAZE 220 5% 1/8W | |
| R931 | 1-216-182-00 | METAL GLAZE 220 5% 1/8W | |
| R932 | 1-216-182-00 | METAL GLAZE 220 5% 1/8W | |
| R933 | 1-216-194-00 | METAL CHIP 680 5% 1/8W | |
| R935 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R936 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R937 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R938 | 1-216-822-11 | METAL CHIP 1.2K 5% 1/16W | |

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|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R939 | 1-218-883-11 | METAL CHIP 33K 0.50% 1/16W | |
| R940 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R941 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R942 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R943 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| R944 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R945 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | |
| R946 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | |
| R947 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R949 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| R950 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R951 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| R952 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R953 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| | | 〈 SWITCH 〉 | |
| S901 | 1-572-467-11 | SWITCH, PUSH (1 KEY)(EJECT) | |
| | | 〈 TRANSFORMER 〉 | |
| T901 | 1-450-874-21 | TRANSFORMER, DC-DC CONVERTER | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | A-7071-654-A | ED-35 BOARD COMPLETE<br>******************** | |
| | | 〈 DIODE 〉 | |
| D986 | 8-719-404-46 | DIODE MA110 | |
| D987 | 8-719-404-40 | DIODE MA121 | |
| | | 〈 SWITCH 〉 | |
| S986 | 1-571-275-31 | SWITCH, SLIDE (BEEP) | |
| S987 | 1-692-111-11 | SWITCH, KEY BOARD (SUMMER TIME) | |
| S988 | 1-571-275-31 | SWITCH, SLIDE (REMOTE COMMANDER) | |
| S989 | 1-692-111-11 | SWITCH, KEY BOARD (AREA) | |
| S990 | 1-571-275-31 | SWITCH, SLIDE (EDIT) | |
| | | 〈 FLAT CABLE 〉 | |
| W986 | 1-696-621-11 | FP-590 FLEXIBLE BOARD | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7063-266-A | JK-91 BOARD, COMPLETE<br>********************* | |
| | 3-719-381-01 | SCREW (M2X4) | |
| * | 3-948-974-01 | FRAME (M), JACK | |
| | | 〈 JACK 〉 | |
| J517 | 1-537-142-21 | TERMINAL BOARD (VIDEO, AUDIO, RFU DC OUT) | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | 〈 FLAT CABLE 〉 | |
| W517 | 1-696-482-11 | CABLE, FLAT (FFC-85) | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7071-652-A | LI-44 BOARD, COMPLETE<br>********************* | |
| | | 〈 CONNECTOR 〉 | |
| * CN516 | 1-580-055-21 | PIN, CONNECTOR 2P | |
| | | 〈 HOLE ELEMENT 〉 | |
| H516 | 1-550-104-32 | HOLDER, BATTERY | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | A-7063-267-A | MA-149 BOARD, COMPLETE<br>********************* | |
| | | 〈 CAPACITOR 〉 | |
| C551 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C552 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C553 | 1-162-960-11 | CERAMIC CHIP 220PF 10% 50V | |
| C554 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C555 | 1-162-587-11 | CERAMIC CHIP 0.039uF 10% 25V | |
| C556 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C557 | 1-162-953-11 | CERAMIC CHIP 100PF 5% 50V | |
| C558 | 1-162-638-11 | CERAMIC CHIP 1uF 16V | |
| C562 | 1-162-638-11 | CERAMIC CHIP 1uF 16V | |
| C563 | 1-126-205-11 | ELECT CHIP 47uF 20% 6.3V | |
| C566 | 1-162-638-11 | CERAMIC CHIP 1uF 16V | |
| C569 | 1-164-492-11 | CERAMIC CHIP 0.15uF 10% 16V | |
| | | 〈 CONNECTOR 〉 | |
| CN551 | 1-566-537-11 | CONNECTOR, FPC (NON ZIF) 5P | |
| CN552 | 1-580-056-21 | PIN, CONNECTOR 3P | |
| | | 〈 DIODE 〉 | |
| D552 | 8-719-404-46 | DIODE MA110 | |
| | | 〈 IC 〉 | |
| IC551 | 8-759-822-37 | IC LA7293M | |
| | | 〈 JACK 〉 | |
| J551 | 1-568-027-11 | JACK, SMALL TYPE 1P (MIC) | |
| | | 〈 TRANSISTOR 〉 | |
| Q551 | 8-729-402-55 | TRANSISTOR 2SB1218A | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| | | ( RESISTOR ) | | | | |
| R551 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W | |
| R552 | 1-216-830-11 | METAL CHIP | 5.6K | 5% | 1/16W | |
| R553 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W | |
| R554 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W | |
| R555 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R556 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R558 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W | |
| R564 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R565 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R566 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R571 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| R572 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |

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A-7071-656-A MF-191 BOARD COMPLETE
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| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| | | ( DIODE ) | | | | |
| D971 | 8-719-404-46 | DIODE MA110 | | | | |
| | | ( RESISTOR ) | | | | |
| R971 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| | | ( SWITCH ) | | | | |
| S971 | 1-692-088-41 | SWITHC, TACTILE (FOCUS) | | | | |
| S972 | 1-241-865-11 | RES, VAR, CARBON 10K (LENS OPEN/CLOSE) | | | | |
| S973 | 1-572-467-11 | SWITCH, PUSH (1 KEY) (FOCUS LING) | | | | |
| | | ( FLAT CABLE ) | | | | |
| W971 | 1-696-484-11 | CABLE, FLAT (FFC-87) | | | | |

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* A-7063-263-A SL-27 BOARD, COMPLETE
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| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| | | ( CAPACITOR ) | | | | |
| C521 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V | |
| C522 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V | |
| C524 | 1-128-013-11 | ELECT CHIP | 1uF | 20% | 50V | |
| C525 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C526 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V | |
| C527 | 1-162-968-11 | CERAMIC CHIP | 0.0047uF | 10% | 50V | |
| | | ( CONNECTOR ) | | | | |
| CN521 | 1-691-482-21 | CONNECTOR, FFC/FPC 15P | | | | |
| CN522 | 1-691-472-21 | CONNECTOR, FFC/FPC 6P | | | | |
| CN523 | 1-691-473-21 | CONNECTOR, FFC/FPC 7P | | | | |
| | | ( IC ) | | | | |
| IC521 | 8-759-059-09 | LB8111V | | | | |
| | | ( TRANSISTOR ) | | | | |
| Q521 | 8-729-402-81 | TRANSISTOR XN4501 | | | | |
| | | ( RESISTOR ) | | | | |
| R522 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R523 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R524 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R525 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R528 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R530 | 1-216-840-11 | METAL CHIP | 39K | 5% | 1/16W | |
| R532 | 1-216-174-00 | METAL GLAZE | 100 | 5% | 1/8W | |
| R533 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| | | ( CONPOSITION CIRCUIT BLOCK ) | | | | |
| RB521 | 1-236-424-11 | NETWORK, RES 10K | | | | |
| RB522 | 1-236-424-11 | NETWORK, RES 10K | | | | |
| | | ( FLAT CABLE ) | | | | |
| W521 | 1-642-186-11 | FP-437 FLEXIBLE BOARD | | | | |
| W522 | 1-696-490-11 | FP-589 FLEXIBLE BOARD | | | | |

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* A-7071-651-A SW-205 BOARD, COMPLETE
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| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| | | ( SWITCH ) | | | | |
| S519 | 1-553-977-00 | SWITCH, SLIDE (STBT) | | | | |
| S520 | 1-571-315-11 | SWITCH, KEY BOARD (START/STO ) | | | | |
| | | ( FLAT CABLE ) | | | | |
| W519 | 1-696-488-11 | CABLE, FLAT (FFC-92) | | | | |

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* A-7063-261-A VC-122 BOARD, COMPLETE
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| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| | | ( CAPACITOR ) | | | | |
| C701 | 1-135-149-21 | TANTALUM CHIP | 2.2uF | 20% | 10V | |
| C702 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C703 | 1-164-361-11 | CERAMIC CHIP | 0.047uF | | 16V | |
| C705 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C707 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C708 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C710 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C711 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C712 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |

# VC-122

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C713 | 1-162-947-11 | CERAMIC CHIP | 33PF | 5% | 50V |
| C714 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C716 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C718 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C719 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C721 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C722 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C723 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C724 | 1-164-634-11 | CERAMIC CHIP | 1uF | | 16V |
| C725 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C726 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C727 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C728 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C729 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C730 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V |
| C731 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C734 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C735 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V |
| C736 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C737 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C738 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C739 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C741 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C742 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C745 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C749 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C750 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C751 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C752 | 1-162-946-11 | CERAMIC CHIP | 27PF | 5% | 50V |
| C801 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C802 | 1-162-919-11 | CERAMIC CHIP | 22PF | 5% | 50V |
| C803 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C804 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C805 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C806 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V |
| C807 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C808 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V |
| C809 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C810 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C811 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C813 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C814 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V |
| C815 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C816 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C817 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C818 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V |
| C819 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C820 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V |
| C821 | 1-162-947-11 | CERAMIC CHIP | 33PF | 5% | 50V |
| C823 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C824 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C826 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C827 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C830 | 1-164-156-11 | CERAMIC CHIP | 0.1uF | | 25V |
| C832 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V |
| C833 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C834 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C835 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C836 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C837 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C838 | 1-135-145-11 | TANTALUM CHIP | 0.47uF | 10% | 35V |
| C839 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C841 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C851 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C852 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V |
| C853 | 1-164-634-11 | CERAMIC CHIP | 1uF | | 16V |
| C854 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C855 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C856 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C857 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C858 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C859 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C860 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V |
| C861 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C862 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C863 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C864 | 1-162-638-11 | CERAMIC CHIP | 1uF | | 16V |
| C866 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C868 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C869 | 1-164-173-11 | CERAMIC CHIP | 0.0039uF | 10% | 50V |
| C870 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V |
| C871 | 1-164-634-11 | CERAMIC CHIP | 1uF | | 16V |

( CONNECTOR )

| | | |
|---|---|---|
| CN701 | 1-573-372-21 | CONNECTOR, BOARD TO BOARD 18P |
| CN801 | 1-573-336-11 | CONNECTOR, BOARD TO BOARD 16P |
| CN851 | 1-573-361-11 | CONNECTOR, FFC/FPC 21P |

( TRIMMER )

| | | |
|---|---|---|
| CT801 | 1-141-356-11 | CAP, ADJ |
| CT801 | 1-141-430-51 | CAP, CHIP TRIMMER |

( FILTER )

| | | |
|---|---|---|
| FL701 | 1-236-834-21 | FILTER, LOW PASS |
| FL702 | 1-415-751-21 | DELAY LINE, LC (YH) |

( IC )

| | | | |
|---|---|---|---|
| IC702 | 8-759-064-36 | IC | MB88346BPFV-EF |
| IC703 | 8-759-710-07 | IC | NJM2234M |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC704 | 8-752-348-92 | IC CXD2101AR | |
| IC705 | 8-759-063-18 | IC CXD2103AR | |
| IC706 | 8-752-355-56 | IC CXD2104BN | |
| IC707 | 8-752-344-53 | IC CXD2100Q | |
| IC709 | 8-752-839-80 | IC CXP80624-424R | |
| IC712 | 8-759-073-67 | IC BR9021AF | |
| IC801 | 8-752-350-16 | IC CXD1257AR | |
| IC802 | 8-752-056-39 | IC CXA1507BR | |
| IC803 | 8-752-053-26 | IC CXA1399Q | |
| IC804 | 8-752-327-48 | IC CXD1250N | |
| IC805 | 8-752-054-61 | IC CXA1390AR | |
| IC851 | 8-759-701-24 | IC NJM3414M-TE1 | |
| IC852 | 8-759-998-96 | IC LM324D | |
| IC853 | 8-759-058-47 | IC MPC1724VMEL | |
| IC854 | 8-759-823-51 | IC LB1830M | |
| IC856 | 8-759-998-98 | IC LM358D | |

( COIL )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| L701 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L703 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L704 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L705 | 1-412-979-21 | INDUCTOR 1uH | |
| L706 | 1-412-062-11 | INDUCTOR CHIP 47uH | |
| L708 | 1-412-979-21 | INDUCTOR 1uH | |
| L710 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L711 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L712 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L714 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L715 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L717 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L720 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L721 | 1-410-391-11 | INDUCTOR CHIP 68uH | |
| L801 | 1-412-029-11 | INDUCTOR CHIP 10uH | |
| L802 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L803 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L804 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L851 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L853 | 1-412-031-11 | INDUCTOR CHIP 47uH | |

( TRANSISTOR )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q701 | 8-729-928-87 | TRANSISTOR DTC124EE | |
| Q702 | 8-729-427-74 | TRANSISTOR XP4601 | |
| Q703 | 8-729-427-74 | TRANSISTOR XP4601 | |
| Q704 | 8-729-425-50 | TRANSISTOR 2SB1462Q | |
| Q706 | 8-729-425-64 | TRANSISTOR 2SD2216Q | |
| Q707 | 8-729-428-84 | TRANSISTOR UN9111 | |
| Q708 | 8-729-425-64 | TRANSISTOR 2SD2216Q | |
| Q709 | 8-729-427-72 | TRANSISTOR XP4501 | |
| Q801 | 8-729-425-64 | TRANSISTOR 2SD2216Q | |
| Q802 | 8-729-427-70 | TRANSISTOR XP4401 | |
| Q851 | 8-729-425-64 | TRANSISTOR 2SD2216Q | |
| Q852 | 8-729-013-88 | TRANSISTOR RN1302 | |
| Q853 | 8-729-427-70 | TRANSISTOR XP4401 | |

( RESISTOR )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R701 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R702 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R703 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R704 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R705 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R707 | 1-216-825-11 | METAL CHIP 2. 2K 5% 1/16W | |
| R708 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R709 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R711 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R712 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R713 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R714 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R715 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R716 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R718 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R720 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R721 | 1-216-825-11 | METAL CHIP 2. 2K 5% 1/16W | |
| R722 | 1-216-825-11 | METAL CHIP 2. 2K 5% 1/16W | |
| R724 | 1-216-829-11 | METAL CHIP 4. 7K 5% 1/16W | |
| R725 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R727 | 1-216-827-11 | METAL CHIP 3. 3K 5% 1/16W | |
| R728 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | |
| R729 | 1-216-825-11 | METAL CHIP 2. 2K 5% 1/16W | |
| R730 | 1-216-825-11 | METAL CHIP 2. 2K 5% 1/16W | |
| R731 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R732 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R733 | 1-216-827-11 | METAL CHIP 3. 3K 5% 1/16W | |
| R734 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R735 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | |
| R736 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R738 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R739 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R742 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R744 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R745 | 1-216-827-11 | METAL CHIP 3. 3K 5% 1/16W | |
| R747 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R749 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R750 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | |
| R751 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R752 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R753 | 1-216-834-11 | METAL CHIP 12K 5% 1/16W | |
| R754 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R755 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R756 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R757 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R758 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R759 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R760 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R761 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R762 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R769 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R770 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R771 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R772 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R773 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R775 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R776 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R777 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R778 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R779 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R780 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R781 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R782 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W | |
| R784 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R785 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R787 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R788 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R791 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R792 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R792 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R793 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R794 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R795 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W | |
| R796 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R797 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R802 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W | |
| R803 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R804 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R805 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R806 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |
| R807 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R808 | 1-216-801-11 | METAL CHIP | 22 | 5% | 1/16W | |
| R809 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R810 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R812 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R813 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R816 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R819 | 1-216-805-11 | METAL CHIP | 47 | 5% | 1/16W | |
| R821 | 1-216-863-11 | METAL GLAZE | 3.3M | 5% | 1/16W | |
| R823 | 1-218-721-11 | METAL CHIP | 16K | 0.50% | 1/16W | |
| R825 | 1-216-832-11 | METAL CHIP | 8.2K | 5% | 1/16W | |
| R826 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R827 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R828 | 1-218-716-11 | METAL CHIP | 10K | 0.50% | 1/16W | |
| R829 | 1-218-744-11 | METAL CHIP | 150K | 0.50% | 1/16W | |
| R830 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R851 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R852 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R853 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R854 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R855 | 1-216-826-11 | METAL CHIP | 2.7K | 5% | 1/16W | |
| R856 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R857 | 1-216-848-11 | METAL CHIP | 180K | 5% | 1/16W | |
| R858 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R859 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R860 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R861 | 1-218-724-11 | METAL CHIP | 22K | 0.50% | 1/16W | |
| R862 | 1-216-848-11 | METAL CHIP | 180K | 5% | 1/16W | |
| R863 | 1-216-855-11 | METAL CHIP | 680K | 5% | 1/16W | |
| R864 | 1-216-134-00 | METAL CHIP | 2.2 | 5% | 1/8W | |
| R865 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R866 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R867 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R868 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R869 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W | |
| R870 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R871 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R872 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W | |
| R873 | 1-216-814-11 | METAL CHIP | 270 | 5% | 1/16W | |
| R874 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W | |

〈 CONPOSITION CIRCUIT BLOCK 〉

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| RB701 | 1-236-420-11 | NETWORK, RES 4.7K | |
| RB702 | 1-236-432-11 | NETWORK, RES 47K | |
| RB703 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB704 | 1-236-416-11 | NETWORK, RES 2.2K | |
| RB705 | 1-236-416-11 | NETWORK, RES 2.2K | |
| RB706 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB707 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB708 | 1-236-412-11 | NETWORK, RES 1.0K | |

〈 VIBRATOR 〉

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| X701 | 1-579-553-11 | VIBRATOR | |
| X801 | 1-579-619-11 | VIBRATOR, CRYSTAL | |

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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7063-183-A | VF-42 BOARD, COMPLETE<br>********************** | |
| ⚠ | 1-540-019-21 | SOCKET ASSY, CRT | |
| | 3-942-888-01 | HOLDER, LED | |

〈 CAPACITOR 〉

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C501 | 1-126-176-11 | ELECT | 220uF | 20% | 10V | |
| C502 | 1-163-077-00 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C503 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V | |
| ⚠C504 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V | |

| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| ⚠C505 | 1-164-713-11 | CERAMIC CHIP 0.0056uF 5% 50V | |
| ⚠C506 | 1-164-713-11 | CERAMIC CHIP 0.0056uF 5% 50V | |
| C507 | 1-127-515-11 | ELECT(SOLID) 47uF 20% 6.3V | |
| C508 | 1-164-611-11 | CERAMIC CHIP 0.001uF 10% 500V | |
| C509 | 1-124-257-00 | ELECT 2.2uF 20% 50V | |
| C510 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C511 | 1-126-090-11 | ELECT 82uF 20% 10V | |
| C512 | 1-137-306-11 | FILM CHIP 0.1uF 5% 16V | |
| C513 | 1-135-149-21 | TANTALUM CHIP 2.2uF 20% 10V | |
| C514 | 1-131-381-00 | TANTALUM 47uF 10% 10V | |
| C515 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C516 | 1-135-149-21 | TANTALUM CHIP 2.2uF 20% 10V | |
| | | ( CONNECTOR ) | |
| * CN501 | 1-566-759-11 | PIN, CONNECTOR (PC BOARD) 4P | |
| * CN502 | 1-566-195-11 | PIN, CONNECTOR (PC BOARD) 2P | |
| * CN503 | 1-566-195-11 | PIN, CONNECTOR (PC BOARD) 2P | |
| | | ( DIODE ) | |
| D501 | 8-719-820-65 | DIODE TLS221 | |
| D502 | 8-719-984-02 | LED BR4371F | |
| D503 | 8-719-400-20 | DIODE MA152WA | |
| | | ( IC ) | |
| IC501 | 8-759-420-01 | IC AN2512S | |
| | | ( COIL ) | |
| L501 | 1-408-976-21 | INDUCTOR 33uH | |
| L502 | 1-408-785-21 | INDUCTOR CHIP 47uH | |
| ⚠L503 | 1-459-876-41 | COIL, FERRITE (HLC) | |
| | | ( TRANSISTOR ) | |
| Q501 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q502 | 8-729-216-31 | TRANSISTOR 2SA1163-G | |
| ⚠Q503 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q504 | 8-729-106-68 | TRANSISTOR 2SD1615A-GP | |
| | | ( RESISTOR ) | |
| R501 | 1-216-033-00 | METAL CHIP 220 5% 1/10W | |
| R502 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R503 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| ⚠R504 | 1-216-324-11 | METAL GLAZE 10K 1% 1/10W | |
| ⚠R505 | 1-218-150-11 | METAL GLAZE 1.2K 1% 1/10W | |
| R506 | 1-216-069-00 | METAL CHIP 6.8K 5% 1/10W | |
| R507 | 1-216-047-00 | METAL CHIP 820 5% 1/10W | |
| R508 | 1-216-689-11 | METAL CHIP 39K 0.5% 1/10W | |
| R509 | 1-216-689-11 | METAL CHIP 39K 0.5% 1/10W | |
| R510 | 1-216-005-00 | METAL CHIP 15 5% 1/10W | |
| R511 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R512 | 1-216-131-11 | METAL CHIP 2.7M 5% 1/10W | |
| R513 | 1-216-101-00 | METAL CHIP 150K 5% 1/10W | |
| R514 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |
| R515 | 1-216-131-11 | METAL CHIP 2.7M 5% 1/10W | |
| R516 | 1-216-055-00 | METAL CHIP 1.8K 5% 1/10W | |
| R517 | 1-216-025-00 | METAL CHIP 100 5% 1/10W | |
| R518 | 1-216-308-00 | METAL CHIP 4.7 5% 1/10W | |
| R519 | 1-216-336-11 | METAL CHIP 47K 1% 1/10W | |
| R520 | 1-216-099-00 | METAL CHIP 120K 5% 1/10W | |
| R521 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |
| R522 | 1-216-160-00 | METAL GLAZE 27 5% 1/8W | |
| R523 | 1-216-053-00 | METAL CHIP 1.5K 5% 1/10W | |
| R524 | 1-216-113-00 | METAL CHIP 470K 5% 1/10W | |
| R525 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| | | ( VARIABLE RESISTOR ) | |
| RV501 | 1-241-596-11 | RES, ADJ, METAL GRAZE 47K | |
| RV502 | 1-241-590-11 | RES, ADJ, METAL GRAZE 470 | |
| RV503 | 1-241-592-11 | RES, ADJ, METAL GRAZE 2.2K | |
| RV504 | 1-228-762-00 | RES, ADJ, METAL GLAZE 1M | |
| | | ( TRANSFORMER ) | |
| ⚠T501 | 1-439-486-11 | TRANSFORMER ASSY, FLYBACK | |
| | | ( THERMISTOR ) | |
| TH501 | 1-809-350-21 | THERMISTOR, NTC (2125) | |
| | | ( FLAT CABLE ) | |
| ⚠W501 | 1-540-019-21 | SOCKET ASSY, CRT | |
| ************************************************************** | | | |
| | A-7071-653-A | VK-27 BOARD COMPLETE<br>******************** | |
| | | ( DIODE ) | |
| D976 | 8-719-404-46 | DIODE MA110 | |
| | | ( SWITCH ) | |
| S976 | 1-572-921-31 | SWITCH, KEY BOARD (STOP) | |
| S977 | 1-692-260-11 | SWITCH, SLIDE (POWER) | |
| S978 | 1-692-247-11 | SWITCH, TACTIL (2 CLICK)(EDIT SERCH (-)) | |
| S979 | 1-572-921-31 | SWITCH, KEY BOARD (REW) | |
| S980 | 1-572-921-31 | SWITCH, KEY BOARD (PB) | |
| S981 | 1-692-247-11 | SWITCH, TACTIL (2 CLICK)(EDIT SERCH (+)) | |
| S983 | 1-572-921-31 | SWITCH, KEY BOARD (FF) | |
| S984 | 1-572-921-31 | SWITCH, KEY BOARD (PAUSE) | |
| | | ( FLAT CABLE ) | |
| W987 | 1-696-622-11 | PA BOARD, PF-591 FLEXIBLE | |

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|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

# VS-95

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| ************************************************************ | | | |
| * | A-7063-260-A | VS-95 BOARD, COMPLETE<br>********************** | |
| | 1-691-471-11 | CONNECTOR, TRANSLATION 11P | |
| | | ( CAPACITOR ) | |
| C001 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C002 | 1-162-953-11 | CERAMIC CHIP 100PF 5% 50V | |
| C003 | 1-162-955-11 | CERAMIC CHIP 150PF 5% 50V | |
| C004 | 1-162-953-11 | CERAMIC CHIP 100PF 5% 50V | |
| C005 | 1-162-953-11 | CERAMIC CHIP 100PF 5% 50V | |
| C006 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C009 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C010 | 1-135-157-21 | TANTALUM CHIP 10uF 20% 6.3V | |
| C011 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C012 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C013 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C014 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C018 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C019 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C020 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C021 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C022 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C023 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C024 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C025 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C026 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C027 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C028 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C029 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C030 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C035 | 1-135-157-21 | TANTALUM CHIP 10uF 20% 6.3V | |
| C049 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C057 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C058 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C059 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C061 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C063 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C064 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C065 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C066 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C067 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C068 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | |
| C069 | 1-162-948-11 | CERAMIC CHIP 39PF 5% 50V | |
| C072 | 1-162-943-11 | CERAMIC CHIP 15PF 5% 50V | |
| C073 | 1-162-952-11 | CERAMIC CHIP 82PF 5% 50V | |
| C074 | 1-162-956-11 | CERAMIC CHIP 180PF 5% 50V | |
| C075 | 1-162-942-11 | CERAMIC CHIP 12PF 5% 50V | |
| C076 | 1-162-945-11 | CERAMIC CHIP 22PF 5% 50V | |
| C077 | 1-164-227-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C080 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C081 | 1-162-945-11 | CERAMIC CHIP 22PF 5% 50V | |
| C082 | 1-164-227-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C083 | 1-164-227-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C085 | 1-162-947-11 | CERAMIC CHIP 33PF 5% 50V | |
| C091 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C150 | 1-162-946-11 | CERAMIC CHIP 27PF 5% 50V | |
| C151 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C156 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | |
| C159 | 1-162-950-11 | CERAMIC CHIP 56PF 5% 50V | |
| C161 | 1-162-953-11 | CERAMIC CHIP 100PF 5% 50V | |
| C167 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C170 | 1-162-568-11 | CERAMIC CHIP 0.33uF 25V | |
| C171 | 1-162-638-11 | CERAMIC CHIP 1uF 16V | |
| C173 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C175 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C176 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C177 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C178 | 1-164-145-11 | CERAMIC CHIP 390PF 5% 50V | |
| C179 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C180 | 1-162-947-11 | CERAMIC CHIP 33PF 5% 50V | |
| C181 | 1-162-965-11 | CERAMIC CHIP 0.0015uF 10% 50V | |
| C182 | 1-162-958-11 | CERAMIC CHIP 270PF 5% 50V | |
| C187 | 1-162-948-11 | CERAMIC CHIP 39PF 5% 50V | |
| C192 | 1-164-217-11 | CERAMIC CHIP 150PF 5% 50V | |
| C194 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C199 | 1-135-149-21 | TANTALUM CHIP 2.2uF 20% 10V | |
| C205 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | |
| C206 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C207 | 1-162-952-11 | CERAMIC CHIP 82PF 5% 50V | |
| C208 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C209 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C213 | 1-164-222-11 | CERAMIC CHIP 0.22uF 25V | |
| C214 | 1-164-005-11 | CERAMIC CHIP 0.47uF 25V | |
| C216 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C217 | 1-135-181-21 | TANTALUM CHIP 4.7uF 20% 6.3V | |
| C218 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C219 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C220 | 1-126-246-11 | ELECT CHIP 220uF 20% 4V | |
| C221 | 1-163-809-11 | CERAMIC CHIP 0.047uF 10% 25V | |
| C222 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C223 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C225 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C226 | 1-164-005-11 | CERAMIC CHIP 0.47uF 25V | |
| C227 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C228 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C229 | 1-135-180-21 | TANTALUM CHIP 3.3uF 20% 6.3V | |
| C230 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C231 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C232 | 1-135-180-21 | TANTALUM CHIP 3.3uF 20% 6.3V | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C233 | 1-128-006-11 | ELECT CHIP | 4.7uF | 20% | 25V | |
| C234 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C235 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C236 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C237 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C238 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C239 | 1-162-957-11 | CERAMIC CHIP | 220PF | 5% | 50V | |
| C240 | 1-162-959-11 | CERAMIC CHIP | 330PF | 5% | 50V | |
| C241 | 1-126-607-11 | ELECT CHIP | 47uF | 20% | 4V | |
| C242 | 1-162-960-11 | CERAMIC CHIP | 220PF | 10% | 50V | |
| C246 | 1-135-157-21 | TANTALUM CHIP | 10uF | 20% | 6.3V | |
| C247 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C248 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C249 | 1-162-959-11 | CERAMIC CHIP | 330PF | 5% | 50V | |
| C250 | 1-164-145-11 | CERAMIC CHIP | 390PF | 5% | 50V | |
| C254 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C255 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C256 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C257 | 1-162-947-11 | CERAMIC CHIP | 33PF | 5% | 50V | |
| C259 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C260 | 1-162-945-11 | CERAMIC CHIP | 22PF | 5% | 50V | |
| C261 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C262 | 1-162-954-11 | CERAMIC CHIP | 120PF | 5% | 50V | |
| C263 | 1-162-951-11 | CERAMIC CHIP | 68PF | 5% | 50V | |
| C264 | 1-162-950-11 | CERAMIC CHIP | 56PF | 5% | 50V | |
| C265 | 1-162-957-11 | CERAMIC CHIP | 220PF | 5% | 50V | |
| C266 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V | |
| C267 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C268 | 1-162-955-11 | CERAMIC CHIP | 150PF | 5% | 50V | |
| C271 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V | |
| C272 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C273 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V | |
| C274 | 1-162-952-11 | CERAMIC CHIP | 82PF | 5% | 50V | |
| C275 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C278 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V | |
| C279 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C280 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C281 | 1-135-146-21 | TANTALUM CHIP | 0.68uF | 20% | 25V | |
| C282 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V | |
| C283 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V | |
| C284 | 1-162-959-11 | CERAMIC CHIP | 330PF | 5% | 50V | |
| C285 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C286 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C288 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C289 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C290 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C291 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C292 | 1-135-180-21 | TANTALUM CHIP | 3.3uF | 20% | 6.3V | |
| C294 | 1-162-638-11 | CERAMIC CHIP | 1uF | | 16V | |
| C296 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C297 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C299 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | |
| C300 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | |
| C301 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C302 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C303 | 1-135-149-21 | TANTALUM CHIP | 2.2uF | 20% | 10V | |
| C304 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C305 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C306 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C307 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V | |
| C308 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | |
| C401 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V | |
| C402 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C404 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V | |
| C406 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C407 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C408 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C409 | 1-162-966-11 | CERAMIC CHIP | 0.0022uF | 10% | 50V | |
| C411 | 1-162-921-11 | CERAMIC CHIP | 33PF | 5% | 50V | |
| C412 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | |
| C413 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V | |
| C414 | 1-164-160-11 | CERAMIC CHIP | 20PF | 5% | 50V | |
| C415 | 1-165-128-11 | CERAMIC CHIP | 0.22uF | | 16V | |
| C416 | 1-162-916-11 | CERAMIC CHIP | 12PF | 5% | 50V | |
| C417 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C418 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C420 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C421 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C422 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C423 | 1-164-361-11 | CERAMIC CHIP | 0.047uF | | 16V | |
| C424 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C425 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C426 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | |
| C427 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C428 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C429 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V | |
| C430 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C431 | 1-162-965-11 | CERAMIC CHIP | 0.0015uF | 10% | 50V | |
| C432 | 1-164-173-11 | CERAMIC CHIP | 0.0039uF | 10% | 50V | |
| C433 | 1-162-918-11 | CERAMIC CHIP | 18PF | 5% | 50V | |
| C434 | 1-162-917-11 | CERAMIC CHIP | 15PF | 5% | 50V | |
| C435 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C436 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C437 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C438 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C439 | 1-162-907-11 | CERAMIC CHIP | 2PF | 0.25PF | 50V | |
| C440 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V | |
| C441 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V | |
| C442 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C444 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C445 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| | | | |
| C446 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C447 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C449 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C450 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C451 | 1-163-038-00 | CERAMIC CHIP 0.1uF 25V | |
| | | | |
| C452 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C453 | 1-162-927-11 | CERAMIC CHIP 100PF 5% 50V | |
| C454 | 1-162-927-11 | CERAMIC CHIP 100PF 5% 50V | |
| C455 | 1-162-969-11 | CERAMIC CHIP 0.0068uF 10% 25V | |
| C456 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| | | | |
| C457 | 1-162-969-11 | CERAMIC CHIP 0.0068uF 10% 25V | |
| C458 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C459 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C460 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C461 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| | | | |
| C462 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C463 | 1-135-215-21 | TANTAL. CHIP 6.8uF 20% 16V | |
| C464 | 1-135-180-21 | TANTALUM CHIP 3.3uF 20% 6.3V | |
| C465 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C466 | 1-164-298-11 | CERAMIC CHIP 0.15uF 10% 25V | |
| | | | |
| C467 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C468 | 1-164-298-11 | CERAMIC CHIP 0.15uF 10% 25V | |
| C469 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C470 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C471 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| | | | |
| C472 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C473 | 1-165-176-11 | CERAMIC CHIP 0.047uF 10% 16V | |
| C474 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C475 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C476 | 1-135-179-21 | TANTAL. CHIP 2.2uF 20% 16V | |
| | | | |
| C477 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C481 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C482 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C483 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C484 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| | | | |
| C485 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C486 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C487 | 1-128-530-11 | ELECT CHIP 33uF 20% 10V | |
| | | ( FILTER ) | |
| CF151 | 1-579-370-11 | FILTER, CERAMIC | |
| | | ( CONNECTOR ) | |
| CN002 | 1-569-775-21 | PIN, CONNECTOR 5P | |
| CN101 | 1-566-538-11 | CONNECTOR, FPC (NON ZIF) 6P | |
| CN102 | 1-580-789-21 | PIN, CONNECTOR (SMD) 6P | |
| CN401 | 1-573-310-11 | CONNECTOR, BOARD TO BOARD 20P | |
| CN403 | 1-573-338-11 | CONNECTOR, BOARD TO BOARD 20P | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| CN404 | 1-695-325-11 | CONNECTOR, BOARD TO BOARD 42P | |
| CN406 | 1-573-343-21 | CONNECTOR, BOARD TO BOARD 30P | |
| * CN407 | 1-580-055-21 | PIN, CONNECTOR 2P | |
| | | ( DIODE ) | |
| D001 | 8-719-800-76 | DIODE 1SS123 | |
| D152 | 8-719-027-48 | DIODE MA142WA | |
| D159 | 8-719-027-50 | DIODE MA142WK | |
| D160 | 8-719-027-50 | DIODE MA142WK | |
| D163 | 8-719-027-50 | DIODE MA142WK | |
| | | | |
| D401 | 8-719-421-27 | DIODE MA728 | |
| D402 | 8-719-027-50 | DIODE MA142WK-(TX) | |
| D403 | 8-719-404-46 | DIODE MA110 | |
| | | ( FILTER ) | |
| FL152 | 1-236-575-11 | B.P.F (PAL-M) | |
| FL153 | 1-236-146-11 | FILTER, BAND PASS | |
| FL155 | 1-236-757-21 | FILTER, LOW PASS (C) | |
| FL401 | 1-406-452-11 | COIL, OSC | |
| | | ( IC ) | |
| IC001 | 8-752-033-38 | IC CXA1202R | |
| IC003 | 8-752-053-21 | IC CXA1211M | |
| IC151 | 8-752-065-54 | IC CXA1207AR | |
| IC152 | 8-752-065-56 | IC CXA1208R | |
| IC154 | 8-752-332-68 | IC CXL5502M | |
| | | | |
| IC155 | 8-752-053-21 | IC CXA1211M | |
| IC156 | 8-759-055-82 | IC M62353GP | |
| IC158 | 8-759-055-82 | IC M62353GP | |
| IC159 | 8-759-636-33 | IC CXA1452N | |
| IC401 | 8-759-056-84 | IC S-8420AF | |
| | | | |
| IC402 | 8-752-836-29 | IC CXP80624-416R | |
| IC403 | 8-759-073-94 | IC uPD75316GF-295-3B9 | |
| IC404 | 8-759-059-42 | IC CXA1481AR | |
| IC405 | 8-759-044-78 | IC BR9011BF-RE2 | |
| IC406 | 8-759-081-96 | IC uPD6456GS-620 | |
| | | | |
| IC407 | 8-759-145-63 | IC uPD7564G-540 | |
| IC408 | 8-759-057-60 | IC MCD004BM | |
| IC409 | 8-759-999-02 | IC TL1596CDB | |
| IC410 | 8-759-062-02 | IC MPC1720VM | |
| | | ( COIL ) | |
| L001 | 1-410-381-11 | INDUCTOR CHIP 10uH | |
| L002 | 1-412-066-21 | INDUCTOR CHIP 220uH | |
| L003 | 1-412-066-21 | INDUCTOR CHIP 220uH | |
| L005 | 1-412-060-11 | INDUCTOR CHIP 22uH | |
| L007 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| | | | |
| L009 | 1-410-380-31 | INDUCTOR CHIP 8.2uH | |
| L010 | 1-410-655-31 | INDUCTOR CHIP 120uH | |
| L011 | 1-412-280-31 | INDUCTOR 330uH | |
| L012 | 1-410-387-11 | INDUCTOR CHIP 33uH | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| L013 | 1-410-657-21 | INDUCTOR CHIP 180uH | |
| L015 | 1-410-381-11 | INDUCTOR CHIP 10uH | |
| L150 | 1-410-389-31 | INDUCTOR CHIP 47uH | |
| L152 | 1-410-385-11 | INDUCTOR CHIP 22uH | |
| L154 | 1-410-390-11 | INDUCTOR CHIP 56uH | |
| L155 | 1-410-390-11 | INDUCTOR CHIP 56uH | |
| L160 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L161 | 1-410-385-11 | INDUCTOR CHIP 22uH | |
| L162 | 1-412-280-31 | INDUCTOR 330uH | |
| L163 | 1-410-167-41 | INDUCTOR CHIP 820uH | |
| L164 | 1-410-657-21 | INDUCTOR CHIP 180uH | |
| L169 | 1-410-389-31 | INDUCTOR CHIP 47uH | |
| L171 | 1-410-390-11 | INDUCTOR CHIP 56uH | |
| L175 | 1-410-393-11 | INDUCTOR CHIP 100uH | |
| L176 | 1-410-656-11 | INDUCTOR CHIP 150uH | |
| L177 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L178 | 1-412-062-11 | INDUCTOR CHIP 47uH | |
| L179 | 1-410-379-31 | INDUCTOR CHIP 6.8uH | |
| L180 | 1-410-393-11 | INDUCTOR CHIP 100uH | |
| L181 | 1-410-393-11 | INDUCTOR CHIP 100uH | |
| L182 | 1-410-655-31 | INDUCTOR CHIP 120uH | |
| L183 | 1-410-385-11 | INDUCTOR CHIP 22uH | |
| L185 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L186 | 1-410-192-51 | INDUCTOR CHIP 1uH | |
| L401 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L402 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L403 | 1-412-062-11 | INDUCTOR CHIP 47uH | |
| L404 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L405 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L406 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L407 | 1-412-052-21 | INDUCTOR CHIP 1uH | |

( IC LINK )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| ⚠PS401 | 1-576-122-21 | RINK, IC | |
| ⚠PS402 | 1-576-123-21 | RINK, IC | |

( TRANSISTOR )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q001 | 8-729-216-22 | TRANSISTOR 2SA812 | |
| Q002 | 8-729-014-16 | TRANSISTOR RN2302 | |
| Q003 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q008 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q010 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q019 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q020 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q021 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q024 | 8-729-102-07 | TRANSISTOR 2SC2223 | |
| Q025 | 8-729-014-16 | TRANSISTOR RN2302 | |
| Q026 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q029 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q151 | 8-729-101-07 | TRANSISTOR 2SB798 | |
| Q152 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q154 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q158 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q161 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q162 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q166 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q168 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q170 | 8-729-420-20 | TRANSISTOR XN4312 | |
| Q171 | 8-729-117-73 | TRANSISTOR 2SC4178 | |
| Q172 | 8-729-117-73 | TRANSISTOR 2SC4178 | |
| Q175 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q176 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q177 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q178 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q180 | 8-729-422-54 | TRANSISTOR XN4215 | |
| Q182 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q183 | 8-729-420-53 | TRANSISTOR UN5115 | |
| Q184 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q189 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q192 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q194 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q195 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q196 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q199 | 8-729-807-87 | TRANSISTOR 2SB1295 | |
| Q200 | 8-729-013-88 | TRANSISTOR RN1302 | |
| Q203 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q204 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q205 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q207 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q208 | 8-729-013-88 | TRANSISTOR RN1302 | |
| Q210 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q212 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q217 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q221 | 8-729-420-12 | TRANSISTOR XN4213 | |
| Q231 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q232 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q233 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q234 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q236 | 8-729-420-56 | TRANSISTOR UN511E | |
| Q237 | 8-729-425-50 | TRANSISTOR 2SB1462Q | |
| Q401 | 8-729-402-48 | TRANSISTOR UN521E | |
| Q403 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q405 | 8-729-013-88 | TRANSISTOR RN1302 | |
| Q409 | 8-729-017-67 | TRANSISTOR 2SB1574 | |

( RESISTOR )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R001 | 1-216-806-11 | METAL GLAZE 56 5% 1/16W | |
| R002 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R003 | 1-216-803-11 | METAL CHIP 33 5% 1/16W | |
| R004 | 1-216-814-11 | METAL CHIP 270 5% 1/16W | |
| R005 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | |

| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R006 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R007 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W |
| R012 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W |
| R013 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R016 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R017 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R020 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W |
| R021 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W |
| R022 | 1-216-840-11 | METAL CHIP | 39K | 5% | 1/16W |
| R023 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W |
| R024 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W |
| R025 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W |
| R026 | 1-216-832-11 | METAL CHIP | 8.2K | 5% | 1/16W |
| R027 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R028 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R029 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R030 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R031 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R033 | 1-216-791-11 | METAL CHIP | 3.3 | 5% | 1/16W |
| R049 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W |
| R050 | 1-216-832-11 | METAL CHIP | 8.2K | 5% | 1/16W |
| R051 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W |
| R052 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W |
| R054 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W |
| R055 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W |
| R056 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R057 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W |
| R058 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W |
| R060 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R061 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R062 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W |
| R063 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R064 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W |
| R066 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W |
| R067 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W |
| R070 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W |
| R071 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W |
| R072 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W |
| R076 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W |
| R078 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W |
| R079 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R081 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R082 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R083 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R085 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R086 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W |
| R087 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W |
| R088 | 1-216-808-11 | METAL CHIP | 82 | 5% | 1/16W |
| R090 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W |
| R097 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R112 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W |
| R113 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R114 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R131 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R132 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R142 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R151 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| R152 | 1-216-830-11 | METAL CHIP | 5.6K | 5% | 1/16W |
| R153 | 1-216-304-11 | METAL CHIP | 3.3 | 5% | 1/10W |
| R154 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W |
| R155 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W |
| R156 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| R158 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R160 | 1-216-819-11 | METAL CHIP | 680 | 5% | 1/16W |
| R161 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W |
| R164 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W |
| R167 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W |
| R168 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W |
| R170 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W |
| R175 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W |
| R177 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W |
| R178 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W |
| R179 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W |
| R189 | 1-216-828-11 | METAL CHIP | 3.9K | 5% | 1/16W |
| R190 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R192 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R193 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R194 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W |
| R196 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W |
| R198 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W |
| R200 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R201 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W |
| R202 | 1-216-840-11 | METAL CHIP | 39K | 5% | 1/16W |
| R203 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R204 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R205 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W |
| R206 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W |
| R208 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R211 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R213 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W |
| R216 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R217 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R218 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W |
| R219 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R220 | 1-216-811-11 | METAL CHIP | 150 | 5% | 1/16W |
| R221 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R222 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W |
| R223 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W |
| R224 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W |
| R226 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R228 | 1-216-812-11 | METAL CHIP | 180 | 5% | 1/16W | |
| R230 | 1-216-807-11 | METAL CHIP | 68 | 5% | 1/16W | |
| R231 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R232 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R242 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R243 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R253 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R254 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R255 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R256 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R257 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R258 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |
| R259 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R260 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R263 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R266 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R267 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R270 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R271 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R272 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R276 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W | |
| R277 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R278 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R279 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R280 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R281 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R282 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R283 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R285 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R286 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R290 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R291 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R293 | 1-216-807-11 | METAL CHIP | 68 | 5% | 1/16W | |
| R294 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R295 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W | |
| R297 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R298 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R299 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R300 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W | |
| R301 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R304 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R306 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R307 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R309 | 1-216-826-11 | METAL CHIP | 2.7K | 5% | 1/16W | |
| R310 | 1-216-848-11 | METAL CHIP | 180K | 5% | 1/16W | |
| R312 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R314 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R315 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R316 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R320 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R321 | 1-216-819-11 | METAL CHIP | 680 | 5% | 1/16W | |
| R323 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R324 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R329 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W | |
| R331 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R333 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W | |
| R334 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R335 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R338 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R339 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R346 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R347 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R352 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R353 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R357 | 1-216-830-11 | METAL CHIP | 5.6K | 5% | 1/16W | |
| R358 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W | |
| R359 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| R360 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| R362 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R363 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R366 | 1-216-844-11 | METAL CHIP | 82K | 5% | 1/16W | |
| R369 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R370 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R371 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R376 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R377 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R378 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R379 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R381 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R386 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W | |
| R387 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R388 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R389 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R390 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R391 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R392 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R393 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R394 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R395 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R396 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R397 | 1-216-828-11 | METAL CHIP | 3.9K | 5% | 1/16W | |
| R398 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R401 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R403 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R404 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R405 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R407 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R408 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R409 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R410 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R411 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R412 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R413 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R414 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R415 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R416 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R417 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R418 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R419 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R420 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R421 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W | |
| R422 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R423 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R424 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R425 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W | |
| R426 | 1-216-852-11 | METAL CHIP | 390K | 5% | 1/16W | |
| R427 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R428 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R429 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R430 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W | |
| R431 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R432 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R433 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R435 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R436 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R437 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R438 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R439 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R441 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R442 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R443 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R445 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R447 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R448 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R449 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R450 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R451 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R452 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R453 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R454 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R456 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R457 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R460 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R461 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R462 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R463 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R468 | 1-216-039-00 | METAL CHIP | 390 | 5% | 1/10W | |
| R469 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W | |
| R470 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W | |
| R471 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R472 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R473 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R474 | 1-217-671-11 | METAL CHIP | 1 | 5% | 1/10W | |
| R475 | 1-217-671-11 | METAL CHIP | 1 | 5% | 1/10W | |
| R476 | 1-216-826-11 | METAL CHIP | 2.7K | 5% | 1/16W | |
| R479 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R480 | 1-217-671-11 | METAL CHIP | 1 | 5% | 1/10W | |
| R481 | 1-217-671-11 | METAL CHIP | 1 | 5% | 1/10W | |
| R484 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R485 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R487 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R489 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W | |
| R490 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R491 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| R492 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R493 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| | | ( CONPOSITION CIRCUIT BLOCK ) | | | | |
| RB401 | 1-236-442-11 | NETWORK, RES 330K | | | | |
| RB402 | 1-236-907-11 | RESISTOR, NETWORK (CHIP TYPE) | | | | |
| RB403 | 1-236-907-11 | RESISTOR, NETWORK (CHIP TYPE) | | | | |
| RB404 | 1-236-908-11 | RESISTOR, NETWORK (CHIP TYPE) | | | | |
| RB405 | 1-236-436-11 | NETWORK, RES 100K | | | | |
| RB406 | 1-236-908-11 | RESISTOR, NETWORK (CHIP TYPE) | | | | |
| RB407 | 1-236-907-11 | RESISTOR, NETWORK (CHIP TYPE) | | | | |
| RB408 | 1-236-908-11 | RESISTOR, NETWORK (CHIP TYPE) | | | | |
| RB409 | 1-236-904-11 | RESISTOR, NETWORK (CHIP TYPE) | | | | |
| RB410 | 1-236-412-11 | NETWORK, RES 1.0K | | | | |
| RB411 | 1-236-424-11 | NETWORK, RES 10K | | | | |
| RB414 | 1-236-904-11 | RESISTOR, NETWORK (CHIP TYPE) | | | | |
| RB416 | 1-236-412-11 | NETWORK, RES 1.0K | | | | |
| RB418 | 1-236-408-11 | NETWORK, RES 470 | | | | |
| RB419 | 1-236-412-11 | NETWORK, RES 1.0K | | | | |
| RB420 | 1-236-904-11 | RESISTOR, NETWORK (CHIP TYPE) | | | | |
| RB421 | 1-236-908-11 | RESISTOR, NETWORK (CHIP TYPE) | | | | |
| RB422 | 1-236-424-11 | NETWORK, RES 10K | | | | |
| RB423 | 1-236-424-11 | NETWORK, RES 10K | | | | |
| RB424 | 1-236-424-11 | NETWORK, RES 10K | | | | |
| RB425 | 1-236-424-11 | NETWORK, RES 10K | | | | |
| RB426 | 1-236-412-11 | NETWORK, RES 1.0K | | | | |
| | | ( VARIABLE RESISTOR ) | | | | |
| RV151 | 1-238-087-11 | RES, ADJ, CERMET 1K | | | | |
| | | ( FLAT CABLE ) | | | | |
| W001 | 1-696-489-11 | FP-588 FLEXIBLE BOARD | | | | |
| W405 | 1-644-285-11 | FP-572 FLEXIBLE BOARD | | | | |

( VIBRATOR )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| X151 | 1-579-365-21 | VIBRATOR, CRYSTAL | |
| X401 | 1-579-063-21 | VIBRATOR, CERAMIC | |
| X402 | 1-579-049-21 | VIBRATOR, CRYSTAL | |
| X403 | 1-579-367-21 | VIBRATOR, CRYSTAL | |
| X404 | 1-579-551-11 | VIBRATOR, CERAMIC | |

****************************************************************

MISCELLANEOUS
*************

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 14 | 1-696-487-11 | CABLE, FLAT (FFC-90) | |
| 18 | A-7091-800-A | MICROPHONE UNIT | |
| 80 | 1-692-257-11 | SWITCH, PUSH (ZOOM) | |
| 106 | 1-547-558-21 | FILTER BLOCK, OPTICAL | |
| 108 | 1-547-548-11 | LENS, ZOOM (VCL-6210WC) | |
| IC875 | A-7030-368-A | CCD BLOCK ASSY (AUTO) | |
| M901 | A-7040-564-A | DRUM ASSY (DGH-78A-R) | |
| M902 | 8-835-477-01 | MOTOR, DC SCE-0101A (CAPSTAN) | |
| M903 | A-7040-304-A | MOTOR BLOCK ASSY, LM (LOADING) | |
| M904 | 3-708-494-01 | METER ASSY, IG (IRIS) | |
| M905 | 3-708-491-01 | MOTOR ASSY, STEPPING (FOCUS) | |
| M906 | 3-708-492-01 | MOTOR ASSY, PZ (ZOOM) | |
| S001 | 1-572-986-11 | SWITCH, ROTARY (ENCODER) | |
| S002 | 1-572-987-11 | SWITCH, PUSH (3KEY) | |
| S005 | 1-570-771-21 | SWITCH, (C DOWN) | |
| ⚠V901 | 1-452-565-11 | CRT ASSY | |

****************************************************************

ACCESSORIES & PACKING MATERIALS
*******************************

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | 1-465-927-71 | REMOTE COMMANDER (CAM CORDER)(RMT-507) (TR31) | |
| | 1-465-927-81 | REMOTE COMMANDER (CAM CORDER)(RMT-507) (TR303/TR303PK) | |
| * | 1-571-163-22 | SWITCH, ANTENNA CHANGE (CABLE) (TR303/TR303PK) | |
| | 3-738-517-01 | BELT (S), SHOULDER | |
| * | 3-754-318-01 | INSTRUCTION (TR303/TR303PK) | |
| | 3-755-493-21 | MANUAL, INSTRUCTION (ENGLISH)(TR31) | |
| | 3-755-493-31 | MANUAL, INSTRUCTION (FRENCH) (TR31:Canadian) | |
| | 3-755-774-41 | MANUAL, INSTRUCTION (ENGLISH) (TR303/TR303PK) | |
| | 3-755-774-51 | MANUAL, INSTRUCTION (FRENCH, GERMAN) (TR303/TR303PK) | |
| * | 3-795-581-21 | SAFEGUARD (SONY), IMPORTANT (TR31:US) | |
| | 3-943-154-11 | HOLDER (B), REMOTE CONTROL | |
| * | 3-949-004-01 | CUSHION, ACC | |
| * | 3-949-005-01 | CUSHION (LOWER) | |
| * | 3-949-006-01 | INDIVIDUAL CARTON (TR31) | |
| * | 3-949-006-41 | INDIVIDUAL CORTON (TR303) | |
| | 3-950-790-01 | CASE, CARRYING, SOFT (TR303PK) | |
| * | 3-950-791-01 | CUSHION (RIGHT), INNER (TR303PK) | |
| * | 3-950-792-01 | CUSHION (LEFT), INNER (TR303PK) | |
| * | 3-950-793-01 | CUSHION (UPPER)(TR303PK) | |
| * | 3-950-794-01 | CUSHION (LOWER)(TR303PK) | |
| * | 3-950-795-01 | INDIVIDUAL CARTON (TR303PK) | |
| | A-6767-816-A | RFU ADAPTOR (RFU-89NA)(TR303/TR303PK) | |
| | A-6768-253-A | RFU ADAPTOR (RFU-90UC)(TR31) | |
| | ** AC-V35 | AC POWER ADAPTOR | |
| | *** NP-55 | BATTERY PACK | |

Note.
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** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY

****************************************************************

*************
HARDWARE LIST
*************

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| #1 | 7-627-853-57 | PRECISION SCREW +P2*5 | |

| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

# SECTION 7
# CAMERA SECTION ADJUSTMENTS

**When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 196.**

## 7-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

### 7-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Stabilized power supply
- Color monitor
- Vectorscope
- Digital voltmeter

| Ref. No. | Name | Part Code | Usage |
|---|---|---|---|
| J-1 | Filter for color temperature correction (C14) | J-6080-058-A | Auto white balance adjustment/check<br>White balance adjustment/check |
| J-2 | ND filter 1.0 | J-6080-808-A | Max gain adjustment (2 used)<br>White balance check |
|  | ND filter 0.4 | J-6080-806-A | Max gain adjustment |
|  | ND filter 0.3 | J-6080-818-A | White balance adjustment |
|  | ND filter 0.1 | J-6080-807-A | Max gain adjustment |
| J-3 | Pattern box PTB-500 | J-6029-140-A |  |
| J-4 | Color chart for pattern box | J-6020-250-A |  |
| J-5 | Adjusting remote control unit (RM-95-remodeled in part)[Note 1] | J-6082-053-B |  |
| J-6 | Extension cord (10P, 1 mm) | J-6082-064-A | For extension of JK-91 board |
| J-7 | Extension cord (20P, 0.8 mm) | J-6082-196-A | For extension of CN-65 board (Cabinet (R))<br>(For the video and the camera section adjustment) |
|  |  |  | For extension of AU-138 board<br>(During the repair of AU-138 board) |
| J-8 | Extension cord (16P, 0.8 mm) | J-6082-136-A | For the extension of the lens block<br>(During the repair of the camera section) |
| J-9 | Relay board (21P, 0.5 mm)[Note 2] | J-6082-176-A | For the extension of the lens block<br>(During the repair of the camera section) |
| J-10 | Measuring pin for camera section | J-6082-139-A | For the camera section adjustment |
| J-11 | Extension cord (42P, 0.8 mm) | J-6082-195-A | For the extension of DD-48 board<br>(During the repair of the video section) |
| J-12 | Siemens star | J-6080-875-A | For flange back check |
| J-13 | Extension cord (20P, 0.5 mm)[Note 2] | J-6082-138-A | For extension between the lens block (FPC) and VC-122 board (CN851)<br>(During the repair of the camera section) |
| J-14 | Extension board (30P, 0.8 mm) | J-6082-167-A | For the extension of VS-95 board<br>(For the mecha deck check) |

**Note 1:** If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

**Note 2:** The extension code (J-6082-138-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-122 board (CN851).

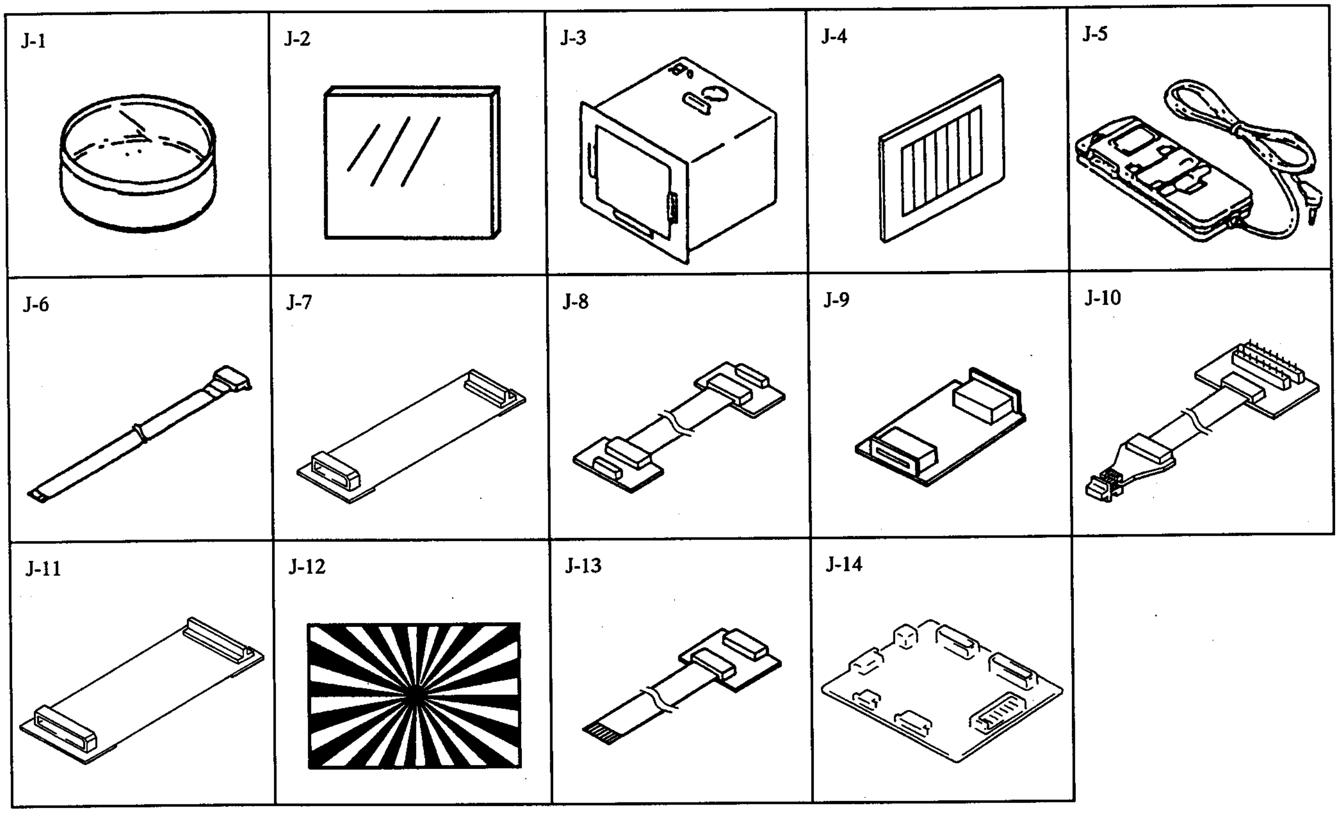

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12
J-13
J-14

Fig. 7-1.

### 7-1-2. Preparations

**Note:** For further details on how to remove the cabinet and each board, refer to "1. Disassembly".

1) Connect the equipments for adjustment as shown in Fig. 7-3.
2) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. If the EVF is not required, remove the VS-95 board CN102.

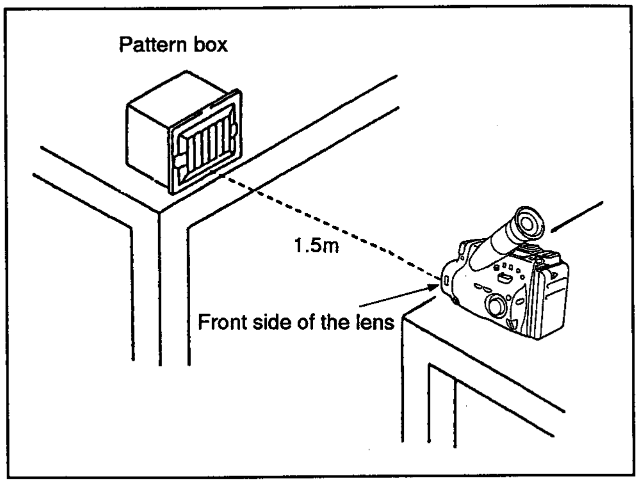
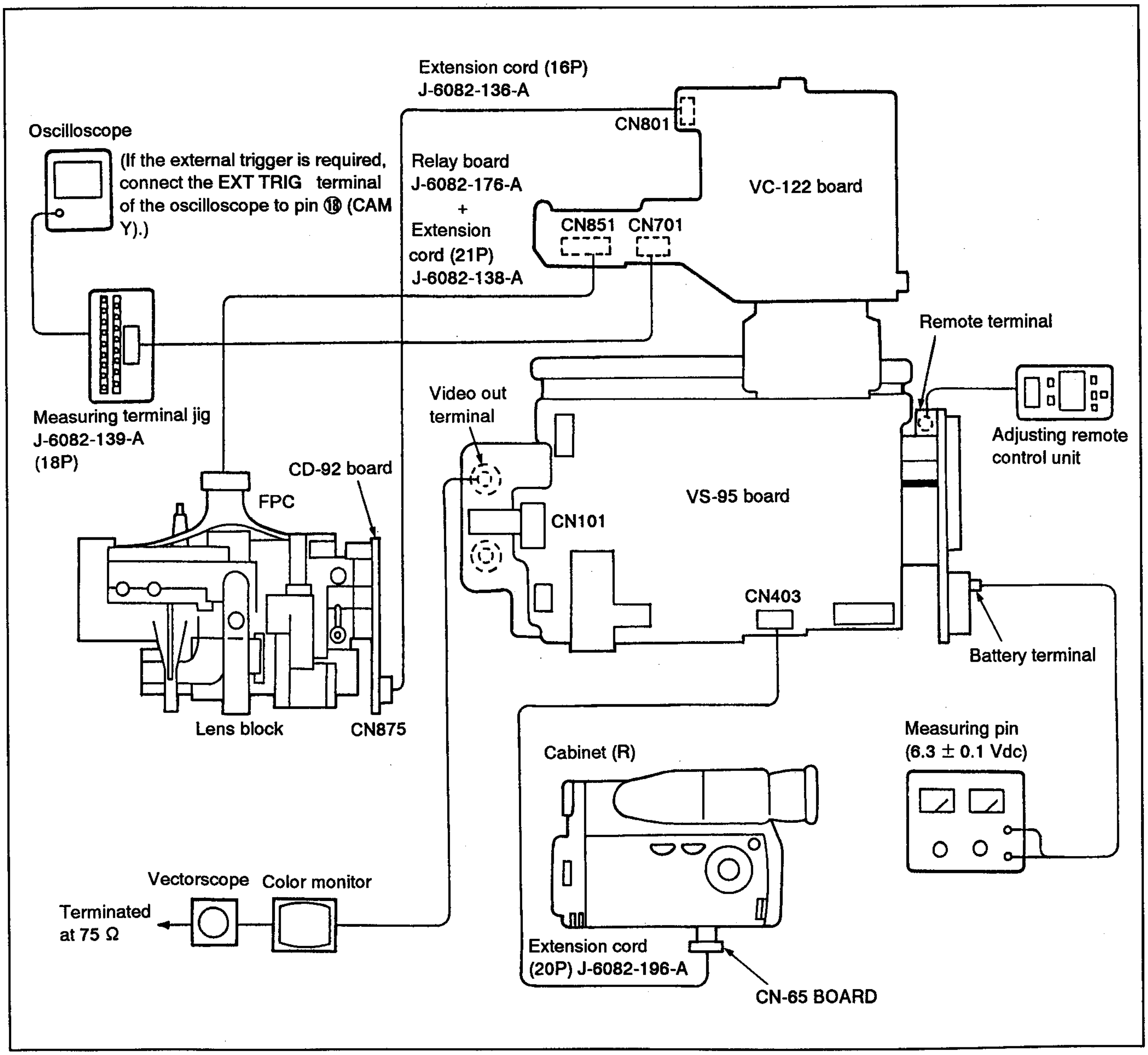

Pattern box
1.5m
Front side of the lens

Fig. 7-2.


Extension cord (16P)
J-6082-136-A
Oscilloscope
CN801
Relay board
J-6082-176-A
+
Extension
cord (21P)
J-6082-138-A
VC-122 board
CN851 CN701
Remote terminal
Measuring terminal jig
J-6082-139-A
(18P)
Video out
terminal
Adjusting remote
control unit
CD-92 board
FPC
VS-95 board
CN101
CN403
Battery terminal
Lens block
CN875
Measuring pin
(6.3 ± 0.1 Vdc)
Cabinet (R)
Vectorscope
Color monitor
Terminated
at 75 Ω
Extension cord
(20P) J-6082-196-A
CN-65 BOARD

(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to pin ⑱ (CAM Y).)

Fig. 7-3.

## 7-1-3. Precautions

### 1. Switch settings

Adjust the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/player power switch (VK-27 board S977)····Camera
2. Standby switch (SW-205 board S519)··················Standby
3. LENS OPEN switch (MF-191 board S973) ·············OPEN
4. FOCUS button (MF-191 board S971) ···············MANUAL
5. PROGRAM AE selector (CF-32 board S997) ·····NORMAL

### 2. Adjustment Procedure

Perform in the given order as a rule.

### 3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the display frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and adjust the zoom lever so that the white pattern becomes the same size and is in the same position as the color bar chart (Standard picture frame).

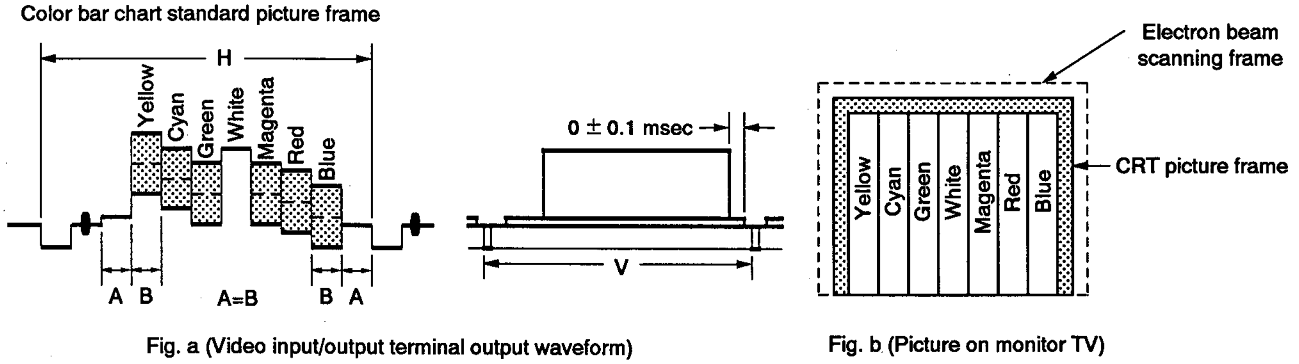

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A
0 ± 0.1 msec
V
Electron beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-5.

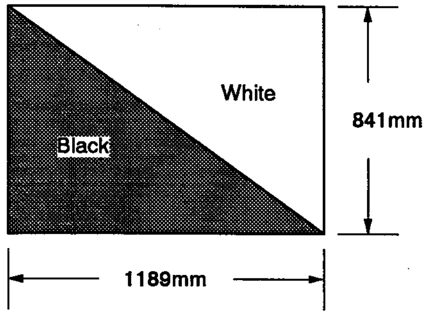

White
Black
841mm
1189mm

Fig. 7-5.

**Note:** Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

### 7-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant using the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-122 board IC702). These processes are carried out by the camera micro processor (VC-122 board IC709). This micro processor reads the data written in the non-volatile memory (VC-122 board IC712), and transmits it to the digital signal processing circuit and EVR.

The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.

The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

### 1. Using the adjusting remote control unit

1) Connect the adjusting remote control unit to the remote terminal (DD-48 board J902).
2) Adjust the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).
   If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 7-6.

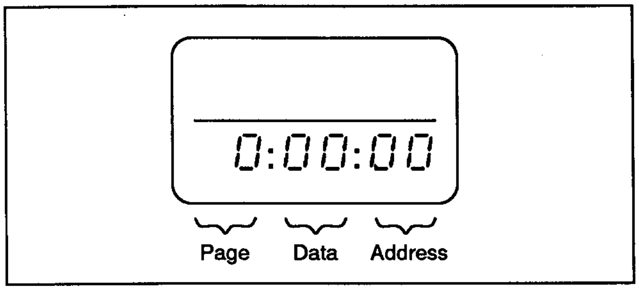


Fig. 7-6.

3) Operate the adjusting remote control unit as follows.
   - Changing the page
     The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Hexadecimal notation** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| **Display on LCD** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | c | d | E | F |
| **Decimal notation conversion value** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

Table 7-1.

   - Changing the address
     The address will increase when the FF ( ►► ) button is pressed, and decrease when the REW ( ◄◄ ) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data will increase when the PLAY ( ▶ ) button is pressed, and decrease when the STOP ( ■ ) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     It is necessary to press the PAUSE button to write the adjustment data (F page, D page) in the non-volatile memory.
     (The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. This releases the write protect of page F, and the camera section (F page) can be adjusted.
5) After completing all adjustments, turn off the main power (6.3V) once. This can release the adjustment mode (other than page F).

### 2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

### 7-1-5. Page F Address List

**Note 1:** The data listed in the adjustment data memo column are fixed values.

**Note 2:** The adjustment data initial values are the values after performing "Page F Data Initialization" and "Page F Data Modification". They are different from the value after performing all the adjustments.

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function<br>[ ] indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>00</td><td>ID</td><td>Set ID</td><td>3D</td><td>3D</td></tr>
<tr><td>01</td><td>FADER LEVEL</td><td>AE REF level modification during fader</td><td>E0</td><td>E0</td></tr>
<tr><td>02</td><td>FADER ENDTIM</td><td>The setting of the AE REF modulation time during fader</td><td>10</td><td>10</td></tr>
<tr><td>03</td><td>CS SL</td><td>Carrier balance adjustment</td><td>35</td><td></td></tr>
<tr><td>04</td><td>VSUB</td><td>CCD imager V SUB adjustment [IC702 ③]</td><td>80</td><td></td></tr>
<tr><td>05</td><td>VPGH</td><td>CCD imager VRG adjustment [IC702 ④]</td><td>80</td><td></td></tr>
<tr><td>06</td><td>VREF Y</td><td>Camera core Y D/A standard voltage, SYNC level adjustment [IC702 ⑤]</td><td>7B</td><td></td></tr>
<tr><td>07</td><td>VREF C</td><td>Camera core CHROMA D/A standard voltage, BURST level adjustment [IC702 ⑥]</td><td>99</td><td></td></tr>
<tr><td>08</td><td>HALL GAIN</td><td>Hole amplifier gain adjustment [IC702 ⑦] } HALL adjustment</td><td>47</td><td></td></tr>
<tr><td>09</td><td>HALL OFFSET</td><td>Hole amplifier offset adjustment [IC702 ⑧]</td><td>71</td><td></td></tr>
<tr><td>0A</td><td>LOWLIGHT CS</td><td>Low luminance intensity REF level modulation start setting</td><td>C0</td><td>C0</td></tr>
<tr><td>0B</td><td>REF 2V</td><td>2V standard voltage for hole element [IC702 ⑫]</td><td>68</td><td>68</td></tr>
<tr><td>0C</td><td>AD REF</td><td>Black level setting during A/D conversion, A/D off set adjustment [IC702 ⑬]</td><td>72</td><td></td></tr>
<tr><td>0D</td><td>CORE DETH</td><td>CCD correction control</td><td>04</td><td>04</td></tr>
<tr><td>0E</td><td>CORE VTR DELAY</td><td>1HDL longitudinal setting during VTR playback</td><td>16</td><td>16</td></tr>
<tr><td>0F</td><td>CORE APCN4</td><td>Horizontal aperture setting</td><td>35</td><td>35</td></tr>
<tr><td>10</td><td>CORE APCN5</td><td>Vertical aperture setting</td><td>3D</td><td>3D</td></tr>
<tr><td>11</td><td>CORE EFECT</td><td>Special effect control</td><td>A8</td><td>A8</td></tr>
<tr><td>12</td><td>CORE MATR</td><td>BLUE matrix constant</td><td>27</td><td>27</td></tr>
<tr><td>13</td><td>CORE MATB</td><td>RED matrix constant</td><td>6C</td><td>6C</td></tr>
<tr><td>14</td><td>CORE BURST LEVEL</td><td>Burst flag level setting, color modulation ON/OFF
<table>
<tr><th>Data</th><th>Adjustment modeAdjustment</th></tr>
<tr><td>2C</td><td>Normal level</td></tr>
<tr><td>2E</td><td>Color modulation stopped</td></tr>
</table></td><td>2C</td><td>2C</td></tr>
<tr><td>15</td><td>CORE CHROMA DLY</td><td>Y/C delay adjustment</td><td>07</td><td>07</td></tr>
<tr><td>16</td><td>CORE Y SETUP</td><td>Set up level setting</td><td>06</td><td>06</td></tr>
<tr><td>17</td><td>CORE VHAPCN</td><td>Slice and level setting of the aperture signal</td><td>18</td><td>18</td></tr>
<tr><td>18</td><td>CORE B-Y GAIN</td><td>B–Y GAIN } Color reproduction adjustments</td><td>13</td><td></td></tr>
<tr><td>19</td><td>CORE R-Y GAIN</td><td>R–Y GAIN</td><td>11</td><td></td></tr>
<tr><td>1A</td><td>CORE R-Y HUE</td><td>R–Y HUE</td><td>FF</td><td></td></tr>
<tr><td>1B</td><td>CORE B-Y HUE</td><td>B–Y HUE</td><td>FD</td><td></td></tr>
<tr><td>1C</td><td>CS/APCCUT</td><td>Low luminance intensity aperture and chroma suppress level</td><td>22</td><td>22</td></tr>
</table>

Table 7-2 (1).

| Address | Name | Function<br>[ ] Indicate the adjustment voltage output terminal | | Adjustment data | |
|---|---|---|---|---|---|
| | | | | Initial value | Memo column |
| 1D | NEXT LINE DEFECT BIT | CCD correction pattern | CCD imager correction data write | 00 | |
| 1E | CCD DEFECT0 | CCD correction data | | 00 | |
| 1F | CCD DEFECT1 | CCD correction data | | 00 | |
| 20 | CCD DEFECT2 | CCD correction data | | 00 | |
| 21 | CCD DEFECT3 | CCD correction data | | 00 | |
| 22 | CCD DEFECT4 | CCD correction data | | 00 | |
| 23 | CCD DEFECT5 | CCD correction data | | 00 | |
| 24 | CCD DEFECT6 | CCD correction data | | 00 | |
| 25 | CCD DEFECT7 | CCD correction data | | 00 | |
| 26 | CCD DEFECT8 | CCD correction data | | 00 | |
| 27 | CCD DEFECT9 | CCD correction data | | 00 | |
| 28 | CCD DEFECT10 | CCD correction data | | 00 | |
| 29 | CCD DEFECT11 | CCD correction data | | 00 | |
| 2A | CCD DEFECT12 | CCD correction data | | 00 | |
| 2B | CCD DEFECT13 | CCD correction data | | 00 | |
| 2C | CCD DEFECT14 | CCD correction data | | 00 | |
| 2D | RREF L | 3200k Red standard data LSB | Auto white balance preset adjustment | 72 | |
| 2E | RREF H | 3200k Red standard data MSB | | 5F | |
| 2F | GREF L | 3200k Green standard data LSB | | D4 | |
| 30 | GREF H | 3200k Green standard data MSB | | 63 | |
| 31 | BREF L | 3200k Blue standard data LSB | | 3B | |
| 32 | BREF H | 3200k Blue standard data MSB | | 2C | |
| 33 | RCONTREF | 3200k RCONT adjustment value | Pre-white balance adjustment | 42 | |
| 34 | BCONTREF | 3200k BCONT adjustment value | | 4A | |
| 35 | AWB NOWM R | Red regular correction coefficient | Auto white balance adjustment | 7E | |
| 36 | AWB NORM B | Blue regular correction coefficient | | 96 | |
| 37 | AWB SHUT IN | Indoor determination shutter data | | A8 | A8 |
| 38 | ABW SHUT OUT | Outdoor determination shutter data | | A0 | A0 |
| 39 | AWB IRIS IN | Indoor determination hole data | IRIS IN/OUT adjustment | 79 | |
| 3A | AWB IRIS OUT | Outdoor determination hole data | | 7F | |
| 3B | AWB G LEVEL | High luminance section green integral level | | 02 | 02 |
| 3C | AWB G WIDTH | High luminance section green integral level range | | 03 | 03 |
| 3D | DMAT HUE | Variable linear matrix HUE coefficient | Linear matrix adjustment | 00 | |
| 3E | DMAT GAIN | Variable linear matrix GAIN coefficient | | 00 | |
| 3F | AWB SELECT | AWB mode selection | | 00 | 00 |
| 40 | AWB DIFF | Standard difference from the outdoor fixed value | | 0A | 0A |
| 41 | AWB BOTTOM SLP R | AWB incoming frame bottom R coefficient | | 48 | 48 |
| 42 | AWB BOTTOM SLP B | AWB incoming frame bottom B coefficient | | 78 | 78 |
| 43 | AWB MIDDLE SLP R | AWB incoming frame middle R coefficient | | 60 | 60 |
| 44 | AWB MIDDLE SLP B | AWB incoming frame middle B coefficient | | 40 | 40 |
| 45 | AWB TOP SLP R | AWB incoming frame top R coefficient | | 66 | 66 |
| 46 | AWB TOP SLP B | AWB incoming frame top B coefficient | | 18 | 18 |

Table 7-2 (2).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function<br>[ ] Indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>47</td><td>AWB KEIKO R</td><td>AWB incoming frame fluorescent light R coefficient</td><td>66</td><td>66</td></tr>
<tr><td>48</td><td>AWB KEIKO B</td><td>AWB incoming frame fluorescent light B coefficient</td><td>18</td><td>18</td></tr>
<tr><td>49</td><td>AWB BOTTOM UP</td><td>AWB incoming frame bottom upper value</td><td>C2</td><td>C2</td></tr>
<tr><td>4A</td><td>AWB BOTTOM DWN</td><td>AWB incoming frame bottom lower value</td><td>8C</td><td>8C</td></tr>
<tr><td>4B</td><td>AWB MIDDLE UP</td><td>AWB incoming frame middle upper value</td><td>AD</td><td>AD</td></tr>
<tr><td>4C</td><td>AWB MIDDLE DWN</td><td>AWB incoming frame middle lower value</td><td>96</td><td>96</td></tr>
<tr><td>4D</td><td>AWB TOP UP</td><td>AWB incoming frame top upper value</td><td>78</td><td>78</td></tr>
<tr><td>4E</td><td>AWB TOP DWN</td><td>AWB incoming frame top lower value</td><td>60</td><td>60</td></tr>
<tr><td>4F</td><td>AWB KEIKO</td><td>AWB incoming frame fluorescent light output lower value</td><td>66</td><td>66</td></tr>
<tr><td>50</td><td>AWB KEIKO DWN</td><td>AWB incoming frame fluorescent light lower value</td><td>59</td><td>59</td></tr>
<tr><td>51</td><td>AWB R TOP LMT</td><td>AWB incoming frame Rcont upper value</td><td>6E</td><td>6E</td></tr>
<tr><td>52</td><td>AWB R DWN LMT</td><td>AWB incoming frame Rcont lower value</td><td>20</td><td>20</td></tr>
<tr><td>53</td><td>AWB B TOP LMT</td><td>AWB incoming frame Bcont upper value</td><td>83</td><td>83</td></tr>
<tr><td>54</td><td>AWB B IN TOP</td><td>AWB incoming frame Bcont</td><td>67</td><td>67</td></tr>
<tr><td>55</td><td>AWB B IN MAX</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>56</td><td>AWB B OUT MIN</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>57</td><td>AWB B OUT DWN</td><td>AWB incoming frame Bcont</td><td>4A</td><td>4A</td></tr>
<tr><td>58</td><td>AWB B DWN LMT</td><td>AWB incoming frame Bcont lower value</td><td>1B</td><td>1B</td></tr>
<tr><td>59</td><td>AWB LL LMT</td><td>Low luminance intensity limiter</td><td>06</td><td>06</td></tr>
<tr><td>5A</td><td>AWB T M DIVID</td><td>AWB incoming frame upper, middle border value</td><td>5E</td><td>5E</td></tr>
<tr><td>5B</td><td>AWB B M DIVID</td><td>AWB incoming frame middle, lower border value</td><td>39</td><td>39</td></tr>
<tr><td>5C</td><td>AWB DELAY TM</td><td>AWB tracking speed
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>01</td><td>High speed tracking mode</td></tr>
<tr><td>10</td><td>Normal</td></tr>
</table></td><td>10</td><td>10</td></tr>
<tr><td>5D</td><td>AWB FAST TM</td><td>AWB initial high speed tracking amount</td><td>40</td><td>40</td></tr>
<tr><td>5E</td><td>AWB OUT HYS OFF</td><td>AWB outdoor hysteresis off difference</td><td>0C</td><td>0C</td></tr>
<tr><td>5F</td><td>AWB OUT B HYS</td><td>AWB outdoor hysteresis amount</td><td>06</td><td>06</td></tr>
<tr><td>60</td><td>AWB MODE</td><td>AWB adjustment mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Normal</td></tr>
<tr><td>D0</td><td>AWB adjustment mode</td></tr>
<tr><td>F1</td><td>All area tracking mode</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>61</td><td>AE REFL</td><td>Reference value (lower) for AE</td><td>00</td><td>00</td></tr>
<tr><td>62</td><td>AE REFH</td><td>Reference value (upper) for AE</td><td>1E</td><td>1E</td></tr>
<tr><td>63</td><td>AGC MIN</td><td>AGC MIN value (AGCREF value), IRIS level adjustment</td><td>E3</td><td></td></tr>
<tr><td>64</td><td>AE MIML</td><td>Low luminance intensity side limiter (MAXGAIN), MAX GAIN adjustment</td><td>32</td><td></td></tr>
<tr><td>65</td><td>AE MAXL</td><td>High luminance intensity side limiter (lower)</td><td>80</td><td>80</td></tr>
<tr><td>66</td><td>IRIS OFFSET</td><td>Iris ROM table OPEN side off set</td><td>D0</td><td>D0</td></tr>
<tr><td>67</td><td>AE KEISU</td><td>Correction coefficient during detection weighting</td><td>00</td><td>00</td></tr>
<tr><td>68</td><td>AE FUNCTION</td><td>SW for turning each AE function ON and OFF</td><td>00</td><td>00</td></tr>
</table>

Table 7-2 (3).

| Address | Name | Function<br>[ ] indicate the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 69 | BL HOSEIH | Forcible back light level setting (upper) | 40 | 40 |
| 6A | JITEISU DOWN | Constant during loop response DOWN side | 30 | 30 |
| 6B | JITEISU UP | Constant during loop response UP side | 10 | 10 |
| 6C | AE KNEE | KNEE setting value for AE | FF | FF |
| 6D | ORETEN SET | Variable point due to time constant error amount | 13 | 13 |
| 6E | OMOMIOUT | Outer frame weighting amount | 40 | 40 |
| 6F | AFC WIDE | Coefficient required for the ANF integral loop | 03 | 03 |
| 70 | AFC GAIN | Loop gain of the flickerless loop | 01 | 01 |
| 71 | AFC LIMIL | Limiter corresponding to the error rate (Lower) | 60 | 60 |
| 72 | HIST P KEISU | Histocomp level setting P for counter light determination | 20 | 20 |
| 73 | HIST H KEISU | Histocomp level setting H for counter light determination | E0 | E0 |
| 74 | HIST L KEISU | Histocomp level setting L for counter light determination | 90 | 90 |
| 75 | GYAKOU JITEISU | Constant during auto back light response | 08 | 08 |
| 76 | SABUN LIMIT | Limiter for counter light determination | 40 | 40 |
| 77 | FUZZY RULE1 | Correction amount 1 for auto back light | A0 | A0 |
| 78 | FUZZY RULE2 | Correction amount 2 for auto back light | D0 | D0 |
| 79 | FUZZY RULE3 | Correction amount 3 for auto back light | E0 | E0 |
| 7A | FUZZY RULE4 | Correction amount 4 for auto back light | B0 | B0 |
| 7B | FUZZY RULE5 | Correction amount 5 for auto back light | 70 | 70 |
| 7C | FUZZY RULE6 | Correction amount 6 for auto back light | 90 | 90 |
| 7D | FUZZY RULE7 | Correction amount 7 for auto back light | B0 | B0 |
| 7E | FUZZY RULE8 | Correction amount 8 for auto back light | B8 | B8 |
| 7F | FUZZY RULE9 | Correction amount 9 for auto back light | 98 | 98 |
| 80 | FUZZY RULE10 | Correction amount 10 for auto back light | 78 | 78 |
| 81 | IRIS MIN L | Iris limit value (lower) | 42 | 42 |
| 82 | IRIS MIN H | Iris limit value (upper) | 02 | 02 |
| 83 | DELTA SHUT GAIN | Shutter smoothing value setting | 04 | 04 |
| 84 | AE WAKUH | Frame data for AE detection (vertical line) | 0F | 0F |
| 85 | AE WAKUV | Frame data for AE detection (horizontal line) | 4F | 4F |
| 86 | WIDE LIMIT | ZOOM limiter WIDE (lower)<br>Flange back adjustment | DE | |
| 87 | WIDE LIMITH | ZOOM limiter WIDE (upper) | 02 | |
| 88 | TELE LIMIT | ZOOM limiter TELE (lower) | 22 | |
| 89 | TELE LIMITH | ZOOM limiter TELE (upper) | 1D | |
| 8A | STEP ZERO | Flange back value | 90 | |
| 8B | STEP ZERO SPAN | Frange back value 2 | A0 | |
| 8C | ZOOM SPD FAST | Zoom speed (fast) | 60 | 60 |
| 8D | ZOOM SPD SUPER | Zoom speed (For adjustment) | 59 | 59 |
| 8E | ZS INIT SLOW | Zoom speed initial value (slow) | 59 | 59 |
| 8F | ZS INIT FAST | Zoom speed initial value (fast) | 59 | 59 |
| 90 | ZMSPD DAMIN | Zoom speed D/A MIN value | 3D | 3D |
| 91 | ZS K | Zoom servo coefficient K | 11 | 11 |
| 92 | ZS L | Zoom servo coefficient L | 04 | 04 |

Table 7-2 (4).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function<br>[ ] indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>93</td><td>ZP HYS</td><td>Zoom potential hysteresis</td><td>03</td><td>03</td></tr>
<tr><td>94</td><td>ZOOM SPD SLOW</td><td>Zoom speed (slow)</td><td>22</td><td>22</td></tr>
<tr><td>95</td><td>AF MD2THL</td><td>MODE2 THR</td><td>20</td><td>20</td></tr>
<tr><td>96</td><td>MAXCHG THR</td><td>MAX value renewal THR</td><td>1A</td><td>1A</td></tr>
<tr><td>97</td><td>ERR THRL</td><td>Wobbling width THR</td><td>18</td><td>18</td></tr>
<tr><td>98</td><td>WOB INTV</td><td>Wobbling second interval</td><td>04</td><td>04</td></tr>
<tr><td>99</td><td>ERRPOL THR</td><td>MODE2 error possible THR</td><td>13</td><td>13</td></tr>
<tr><td>9A</td><td>MAXCHK THR</td><td>MAX CHECK THR</td><td>12</td><td>12</td></tr>
<tr><td>9B</td><td>REWOB THR</td><td>Wobbling second THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9C</td><td>MODE2 INOUT</td><td>MODE2 speed switchover</td><td>8B</td><td>8B</td></tr>
<tr><td>9D</td><td>SMLWD THR</td><td>Small frame THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9E</td><td>ZOOM PULSE LIMIT</td><td>Maximum zoom pulse value</td><td>C6</td><td>C6</td></tr>
<tr><td>9F</td><td>ZOOM RIZE</td><td>Zoom rise minimum speed time</td><td>0A</td><td>0A</td></tr>
<tr><td>A0</td><td>FB CURVEPEAKL</td><td>Constant for flange back adjustment</td><td>F5</td><td>F5</td></tr>
<tr><td>A1</td><td>FB CURVEPEAKH</td><td>Constant for flange back adjustment</td><td>0B</td><td>0B</td></tr>
<tr><td>A2</td><td>FB ZOOMSL</td><td>Constant for flange back adjustment</td><td>02</td><td>02</td></tr>
<tr><td>A3</td><td>FB ZOOMSH</td><td>Constant for flange back adjustment</td><td>07</td><td>07</td></tr>
<tr><td>A4</td><td>LIMITREST WIDE</td><td>Zoom limiter WIDE side</td><td>14</td><td>14</td></tr>
<tr><td>A5</td><td>LIMITREST TELE</td><td>Zoom limiter TELE side</td><td>17</td><td>17</td></tr>
<tr><td>A6</td><td>FB PEAKTHR</td><td>Constant for flange back adjustment</td><td>FF</td><td>FF</td></tr>
<tr><td>A7</td><td>FB ZOOM SLOW</td><td>Constant for flange back adjustment</td><td>1C</td><td>1C</td></tr>
<tr><td>A8</td><td>DET IRIS ALT</td><td>Iris variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>A9</td><td>DET AGC ALT</td><td>AGC variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>AA</td><td>LIMIT INSURANCE</td><td>Focus limiter insurance value</td><td>02</td><td>02</td></tr>
<tr><td>AB</td><td>FOCUS MODE</td><td>Focus mode<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>08</td><td>Zoom, Focus fixed</td></tr><tr><td>00</td><td>Normal</td></tr></table></td><td>00</td><td>00</td></tr>
<tr><td>AC</td><td>LENS ADJ MODE</td><td>Flange back adjustment mode<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>00</td><td>Nomal</td></tr><tr><td>01</td><td>Flange back adjustment</td></tr></table></td><td>00</td><td>00</td></tr>
<tr><td>AD</td><td>LENS EMRG</td><td>Lens emergency</td><td>00</td><td>00</td></tr>
<tr><td>AE</td><td>NTSC PAL/H DEF DELAY</td><td>DELAY bit=0: NTSC, 1: PAL, bit4-7=CCD correction delay</td><td>20</td><td>20</td></tr>
<tr><td>AF</td><td>FT SW</td><td>DDS display mode switchover<table><tr><th>Data</th><th>DDS display mode</th></tr><tr><td>00</td><td>Y sampling display</td></tr><tr><td>02</td><td>R–Y display</td></tr><tr><td>40</td><td>HALL data display</td></tr><tr><td>82</td><td>R ratio display</td></tr><tr><td>83</td><td>B ratio display</td></tr><tr><td>91</td><td>R, B ratio (M) display</td></tr><tr><td>B0</td><td>Focus step display</td></tr></table></td><td>00</td><td>00</td></tr>
</table>

Table 7-2 (5).

| Address | Name | Function<br>[ ] Indicate the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| B0 | CORE OTHER | CORE MODE DATA 13 byte | 12 | 12 |
| B1 | CORE Y GAIN | CORE FIELD DATA 0 byte | 3F | 3F |
| B2 | E LOW LIGHT START | Low light chroma suppress start point | 30 | 30 |
| B3 | | | | |
| B4 | YAKEI LEVEL | YAKEI mode gain setting value | 40 | 40 |
| B5 | | | | |
| B6 | ZOOM DROP 1 | F-No. dropping (1) by Zoom lens | 60 | 60 |
| B7 | ZOOM DROP 2 | F-No. dropping (2) by Zoom lens | 75 | 75 |
| B8 | | | | |
| B9 | | | | |
| BA | AWB IN B HYS | Hysteresis of AWB indoor BLUE | 04 | 04 |
| BB | AWB IN R HYS | Hysteresis of AWB indoor RED | 02 | 02 |
| BC | AWB KAKE NORM R | ADD: 35 NORM R × 1000H | 20 | 20 |
| BD | AWB KAKE NORM B | ADD: 36 NORM B × 1000H | 20 | 20 |
| BE | MF STEP CHNGE | Coefficent of MODE 2 THR | 46 | 46 |
| BF | MD2 LOWCON SPD | Speed for Low-contrast at MODE 2 | 07 | 07 |
| C0 | MAX CHECK NG CNT | MAX CHECK NG count | 1E | 1E |
| C1 | AF CONTROL FLAG | | 0E | 0E |
| C2 | AE Y THR | Low light AE fluctuation THR 1 | 28 | 28 |
| C3 | AE Y MIN | Low light AE fluctuation THR 2 | 20 | 20 |
| C4 | MD2 SPD | Focus speed at MODE 2 | 61 | 61 |
| C5 | AE CHECK | Re-start up AE THR | 10 | 10 |
| C6 | LOW CON THR | THR 1 for judging Low-contrast at MODE 2 | 10 | 10 |
| C7 | LOW CON THR2 | THR 2 for judging Low-contrast at MODE 2 | 20 | 20 |
| C8~EF | | Not used | | |
| F0 | | Input column of the unit ID No., etc. Not related to unit operations. | FF | |
| F1 | | | FF | |
| F2 | | | FF | |
| F3 | | | FF | |
| F4 | | | FF | |
| F5 | | | FF | |
| F6 | | | FF | |
| F7 | | | FF | |
| F8 | | | FF | |
| F9 | | | FF | |
| FA | | | FF | |
| FB | | | FF | |
| FC | | | FF | |
| FD | | | FF | |
| FE | | | FF | |
| FF | | | FF | |

Table 7-2 (6).

### 7-1-6. 6 Page, 1 Page Address List

The camera adjustment mode can be set by performing the following data settings at page: 6 or page: 1. (These page data can be set temporary, but when the main power (6.3V) is turned off, the original value (normal value) will be returned. Therefore, these adjustment modes can be released very simply by turning the main power off.)

**(Example)** The camera adjustment mode (1) is set by setting data: 01 to page: 6, address: 00. The F page write protect will also be released.

### 1. Page 6

| Address | Adjustment Mode | Data | Function |
|---|---|---|---|
| 00 | Camera adjustment mode | 01 | Camera adjustment mode (1), F page write protect released |
| | | 10 | Normal |
| | | 11 | Camera adjustment mode (2), F page write protect released |
| 01 | Camera adjustment switch<br>**Note:** To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data. | 00 | Normal |
| | | 01 | IRIS OPEN, AGC HOLD |
| | | 03 | IRIS CLOSE1, AGC HOLD |
| | | 05 | IRIS CLOSE2, AGC MIN |
| | | 07 | IRIS CLOSE3, AGC MAX |
| | | 09 | ND0.5 SHUTTER (PAL=1/160, NTSC=1/190) |
| | | 0B | ND0.8 SHUTTER (PAL=1/320, NTSC=1/380) |
| | | 0D | AWB PRESET1: 3200K PRESET DATA take in |
| | | 0F | WB 3200K PRESET: Indoor white balance mode |
| | | 11 | AWB PRESET2: Preparation of 3200K PRESET DATA take in |
| | | 13 | ZOOM HUNTING1 ZOOM SPDSLOW |
| | | 15 | ZOOM HUNTING2 ZOOM SPDFAST |
| | | 17 | AE FB adjustment mode<br>(IRIS: OPEN, AGC: REF, SHUTTER: 1/100 (NTSC), 1/120 (PAL)) |
| | | 1D | EEPROM PRE WRITE: Page F initial data write |
| 05 | Shutter mode | 00 | NTSC=1/60, PAL=1/50 |
| | | 19 | 1/2000 |
| 06 | FOCUS limiter ON/OFF | 00 | FOCUS limiter ON (Normal) |
| | | 01 | FOCUS limiter OFF |
| 07 | ZOOM limiter ON/OFF | 00 | ZOOM limiter ON (Normal) |
| | | 01 | ZOOM limiter OFF |
| 08 | ZOOM speed SLOW/FAST | 00 | Normal |
| | | 01 | ZOOM speed SLOW |
| | | 02 | ZOOM speed FAST |
| | | 03 | ZOOM speed SUPER SLOW |
| 09<br>★ | COMPLEATED FLAG | 00 | Camera Adjustment not completed |
| | | 01 | Camera adjustment completed |
| 11<br>★ | ROM VERSION | 01 | Camera micro processor ver1 |
| | | 02 | Camera micro processor ver2 |
| | | 03 | Camera micro processor ver3 |
| 0C<br>★ | LENS INITIAL END | 00 | During the initial operation of the lens |
| | | 01 | Lens initial operation completed |

Addresses with ★ are exclusively for reading.

Table 7-3.

### 2. Page 1

| Address | Adjustment Mode | Data | Function |
|---|---|---|---|
| E6 | VH address L | | Title horizontal/vertical position (L) |
| E7 | VH address H | | Title horizontal/vertical position (H) |

Table 7-4.

### 7-1-7. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN701 of the VC-122 board. Connect the oscilloscope and etc. via the measuring pin (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN701.

| Terminal Number | Signal Name | Terminal Number | Signal Name |
|---|---|---|---|
| 1 | D5V | 2 | NC |
| 3 | NC | 4 | CAM SI |
| 5 | NC | 6 | CAM SO |
| 7 | $\overline{\text{CS OPD}}$ | 8 | $\overline{\text{CAM SCK}}$ |
| 9 | $\overline{\text{CS CORE}}$ | 10 | GND |
| 11 | IRIS OUT | 12 | NC |
| 13 | V SUB CHK | 14 | CAM C |
| 15 | PG CONT | 16 | GND |
| 17 | NC | 18 | CAM Y |

Table 7-5.

### 7-1-8. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-6. indicates the hexadecimal notation-the decimal notation calculation table.

**Hexadecimal notation-Decimal notation**

| The lower digits of the hexadecimal notation<br>The upper digits of the hexadecimal notation | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A (A) | B (b) | C (c) | ②<br>D (d) | E (E) | F (F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 1 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| 2 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
| 3 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |
| 4 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
| 5 | 80 | 80 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
| 6 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 |
| 7 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |
| 8 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 |
| 9 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 |
| A (A) | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 |
| ① B (b) | 176 | 177 | 178 | 179 | 180 | 180 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 |
| C (c) | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 |
| D (d) | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 |
| E (E) | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 |
| F (F) | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 |

**Note:** ( ) indicate the adjusting remote control unit display.

**(Example)** In the case that the DDS display and the adjusting remote control unit display are BD ( b d ).
As the upper digit of the hexadecimal notation is B ( b ), and the lower digit is D ( d ), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-6.

## 7-2. CAMERA SYSTEM ADJUSTMENT

### 1. Power Supply Voltage Check (DD-48 board)

| | |
|---|---|
| Subject | Option |
| Measuring instrument | Digital voltmeter |
| D5V check | |
| Measurement point | Pins ⑤ and ⑧ of CN901 |
| Specified value | 4.92 ± 0.15 Vdc |
| D4V check | |
| Measurement point | Pin ④ of CN901 |
| Specified value | 3.98 ± 0.15 Vdc |
| CAM 5V check | |
| Measurement point | Pins ⑦ and ⑩ of CN901 |
| Specified value | $4.86 \begin{smallmatrix}+0.15\\-0.11\end{smallmatrix}$ Vdc |
| CAM 15V check | |
| Measurement point | Pin ⑫ of CN901 |
| Specified value | 15.05 ± 0.4 Vdc |
| CAM –9V check | |
| Measurement point | Pin ⑨ of CN901 |
| Specified value | –8.5 ± 0.4 Vdc |

Checking method:

1) Check that each power supply voltage satisfies the specified value.

### 2. Page F Data Initialization

**Note:** It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Check that the data of page: 6, address: 09 is 00.
(Display indicating that page F data can be initialized)
2) Check that the data of page: 6, address: 01 is 00.
3) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Page F data initialization execution.
The data of all addresses of page F will be initialized.)
4) Check that the data of page: 6, address: 09 is 01.
(Displays that the initialization of page F data has been completed)
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
(Releases the page F data initialization mode)
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

### 3. Page F Data Modification

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

**Note:** When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

| Address | Data |
|---|---|
| 00 (ID) | 3D |
| 0A (LOW LIGHT CS) | C0 |
| A2 (FB ZOOM SL) | 02 |
| A3 (FB ZOOM SH) | 07 |
| B2 (E LOW LIGHT START) | 30 |

### [Distinguishing the Camera Micro Computer (IC709) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 11.

| Version | Part Name | Page: 6 Address: 11 |
|---|---|---|
| Ver.1 | CXP80624-417R | 01 |
| Ver.2 | CXP80624-424R | 02 |
| Ver.3 | CXP80624-434R | 03 |

### 4. 28 MHz Original Oscillation Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Pin ⑰ of IC706 (14 MHz) |
| Measuring Instrument | Frequency counter |
| Adjusting Element | CT801 |
| Specified Value | 14318181 ± 71 Hz |

Adjusting method:

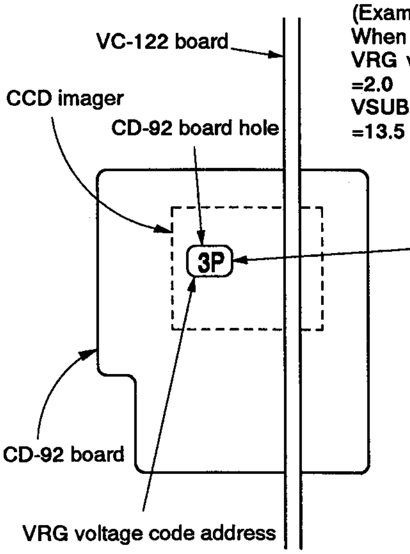
1) Use CT801 to adjust the oscillation frequency to 14318181 ± 71 Hz.

## 5. V SUB Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Pin ⑬ of CN701 (V SUB CHK) |
| Measuring Instrument | Digital voltmeter |
| Adjustment Page | F |
| Adjustment Address | 04 (V SUB) |
| Specified Value | (Imager display voltage) ± 0.1 Vdc |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 04, and adjust the voltage of pin ⑬ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.



(Example)
When the display is 3P, the VRG voltage specified value =2.0 ± 0.1 Vdc, and the VSUB voltage specified value =13.5 ± 0.1 Vdc.

VRG voltage code address

| Code address | Voltage (Vdc) |
|---|---|
| 1 | 1.0 |
| 2 | 1.5 |
| 3 | 2.0 |
| 4 | 2.5 |
| 5 | 3.0 |
| 6 | 3.5 |
| 7 | 4.0 |

VSUB voltage code address

| Code address | Voltage (Vdc) |
|---|---|
| E | 9.0 |
| F | 9.5 |
| G | 10.0 |
| H | 10.5 |
| J | 11.0 |
| K | 11.5 |
| L | 12.0 |
| M | 12.5 |
| N | 13.0 |
| P | 13.5 |
| Q | 14.0 |
| R | 14.5 |
| S | 15.0 |
| T | 15.5 |
| U | 16.0 |
| V | 16.5 |
| W | 17.0 |
| X | 17.5 |
| Y | 18.0 |
| Z | 18.5 |

Fig. 7-7.

## 6. VRG Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Pin ⑮ of CN701 (PG CONT) |
| Measuring Instrument | Digital voltmeter |
| Adjustment Page | F |
| Adjustment Address | 05 (VRG) |
| Specified Value | (Imager display voltage) ± 0.1 Vdc |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 05, and adjust the voltage of pin ⑮ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.

## 7. CCD Imager Correction Data Write

| | |
|---|---|
| Subject | Not required |
| Adjustment Page | F |
| Adjustment | 1D to 2C (CCD-DEFECT) |

Perform CCD imager correction data write in the following cases.

1. When the CCD imager has been replaced
2. The ocassion of exchaning a camera micro processor or EEPROM (IC712).
3. When the page F data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 1D to 2C to "00".

In the case of 2 and 3, write the correction data attached to the shield case of VC-122 board to addresses 1D to 2C.

If the correction data are not attached, adjust all data of addresses 1D to 2C to "00".

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Write the correction data to page: F, addresses: 1D to 2C.
   **Note:** To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit before changing addresses.

Processing after completing adjustments

1) If the CCD imager has been replaced, remove the old correction data label attached on the shield case (UPPER) of VC-122 board.

## 8. HALL Adjustment

| | |
|---|---|
| Subject | Not required |
| Measurement Point | DDS display of EVF or monitor TV |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 08 (HALL GAIN)<br>09 (HALL OFFSET) |
| Specified Value | 31 to 35 during IRIS OPEN<br>B1 to B5 during IRIS CLOSE |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL output display mode setting)
3) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
4) Set data: 40 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
5) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and set to $W_2$.
6) Set data: 30 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
7) Read the DDS display data, and set to $W_1$.
8) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
9) Read the DDS display data, and set to $K_1$.
10) Set data: 40 to page: F, address: 08, and press the PAUSE button.
11) Read the DDS display data, and set to $K_2$.
12) Convert $W_1$, $W_2$, $K_1$, $K_2$ to decimal notation, and obtain $W_1'$, $W_2'$, $K_1'$, $K_2'$. (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table".)
13) Calculate $X_1'$ using the following equations (decimal notation calculation).
    $A'=W_2'+K_1'-W_1'-K_2'$ ··························Equation 1
    $B'=W_1'-K_1'$ ··········································Equation 2
    $X_1'=\dfrac{2048+(48\times A')-(16\times B')}{A'}$ ················Equation 3
14) Convert $X_1'$ to hexadecimal notation, and obtain $X_1$.
    (Round off to one decimal place)
15) Set data: $X_1$ to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
16) Change the data of page: F, address: 09, and adjust the DDS display data to "33".
17) Press the PAUSE button of the adjusting remote control unit.
18) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS CLOSE mode setting)
19) Read the DDS display data, and set to $W_0$. If $W_0$ lies within the "B1" to "B5" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
20) Convert $W_0$ to hexadecimal notation, and obtain $W_0'$.
21) Calculate $X_2'$ using the following equations (decimal notation calculation).
    $C'=W_0'-B'-51$ ···································Equation 4
    $X_2'=\dfrac{(128-B')\times(X_1'-48)+48\times C'}{C'}$ ···········Equation 5
    ($X_1'$ and $B'$ are values obtained from equations 2 and3)
22) Convert $X_2'$ to hexadecimal notation and obtain $X_2$.
    (Round off to one decimal place)
23) Set data $X_2$ to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
24) Change the data of page: F, address: 09, and adjust the DDS display data to "B3".
25) Press the PAUSE button of the adjusting remote control unit.
26) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS OPEN mode setting)
27) Check that the DDS display data lies within the "31" to "35" range.

Processing after Completing Adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

## 9. Flange Back Adjustment

| | |
|---|---|
| Subject | Chart for flange back adjustment (1998 ± 5mm from the front side of the lens Luminance: 300 ± 50 lux) |
| Measurement Point | Check the operations on the TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 86 (WIDE LIMIT),<br>87 (WIDE LIMIT H),<br>88 (TELE LIMIT),<br>89 (TELE LIMIT H),<br>8A (STEP ZERO),<br>8B (STEP ZERO SPAN) |

Adjusting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
4) Release the protect.
   Page: 6, address: 00, data: 01
5) Check that the data of page: 6, address: 09 is 00.
   (Flange back adjustment possible display)
6) Check that the page: F, address: 86 to 8B data is at the initial value. (Refer to Table 7-2. "Page F address list")
7) Set data: 01 to page: F, address: AC.
   (This causes automatic adjustment to be performed. Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 86 to 8B.)
8) Check that the data of page: 6, address: 09 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Set data: 00 to page: F, address: AC.
2) Turn off the main power supply (6.3V).

## 10. Flange Back Check

| | |
|---|---|
| Subject | Siemens star (2m (or 1.4m) from the front of the lens) |
| Measurement Point | DDS display of EVF or TV monitor |
| Measuring Instrument | |
| Specified Value | $D_2=D_1 \pm 5$ |

Checking method:

1) Set data: 01 to page: 6, address: 00. (Camera adjustment mode)
2) Set data: B0 to page: F, address: AF. (Focus step display mode)
3) Place the Siemens star 2m (or 1.4m) from the front of the lens.
4) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image displayed on the monitor TV screen.
5) Turn off the auto-focus.
6) Shoot the Siemens star with the zoom TELE end.
7) Rotate the focus ring, and adjust the focus.
8) Adjust to the zoom WIDE end.
9) Read the focus step value (4 digits) displayed on the TV monitor, and take the value as $D_1$.
10) Rotate the focus ring, and adjust the focus.
    Read the focus step value here, and take the value as $D_2$.
11) Check that $D_2=D_1 \pm 5$.

Process after checking

1) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.

## 11. SYNC Level Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Pin ⑱ of CN701 (CAM Y) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | F |
| Adjustment Address | 06 (VREF-Y) |
| Specified Value | A=140 ± 5 mV |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 06, and adjust so that the SYNC level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

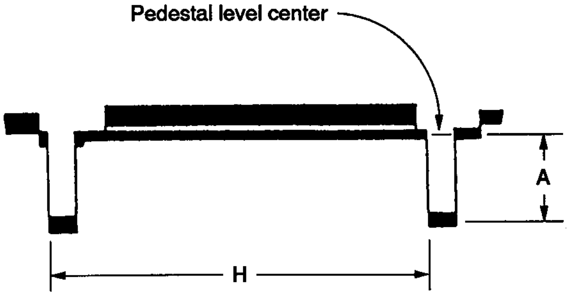


Fig. 7-8.

## 12. BURST Level Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Pin ⑭ of CN701 (CAM C) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | F |
| Adjustment Address | 07 (VREF-C) |
| Specified Value | A=140 ± 5 mVp-p |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 07, and adjust so that the burst level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

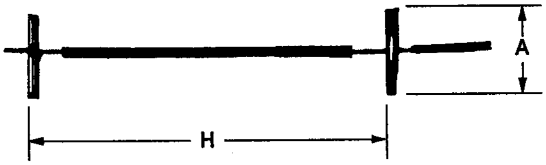


Fig. 7-9.

## 13. A/D Offset Adjustment

| | |
|---|---|
| Subject | Not required |
| Measurement Point | DDS display on the EVF or the TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 0C (AD REF) |
| Specified Value | 46 to 47 |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE AGC MIN mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Y sampling output mode setting)
4) Set data: 35 to page: 1, address: E6.
   (Setting 1 of the sampling position)
5) Set data: 6D to page: 1, address: E7.
   (Setting 2 of the sampling position)
6) Change the data of page: F, address: 0C, and adjust the average value of the DDS display (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor display) to 46 to 47.
   (Set the data of address 0C to the maximum value satisfying the specification.)
7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Turn the main power supply (6.3V) off.

## 14. Carrier Balance Adjustment

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjustment Page | F |
| Adjustment Address | 03 (CS SL) |
| Specified Value | The center of the black luminance point should lie within the 1 ϕ circle whose center is the principle point. |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Set data: 07 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE, AGC MAX mode setting)
3) Change the data of page: F, address: 03, and adjust so that the center of the black luminance point coincides with the principle point.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

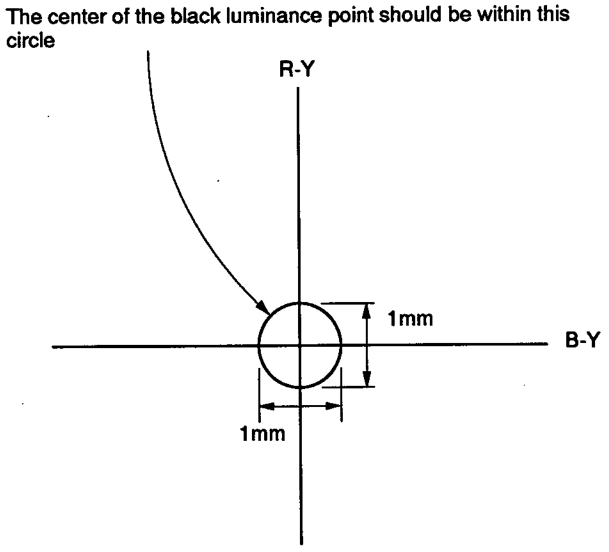

The center of the black luminance point should be within this circle
R-Y
1mm
B-Y
1mm

Fig. 7-10.

## 15. Picture Frame Setting

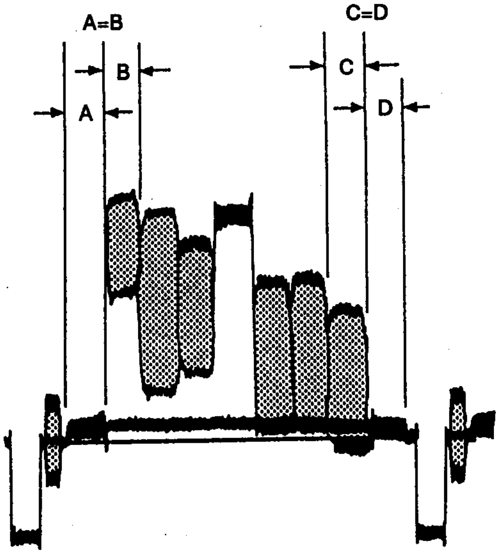
| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Video output terminal |
| Measuring Instrument | Oscilloscope and TV monitor. |
| Specified Value | A=B, C=D, t=0 ± 0.1 msec |

Setting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame" and "white pattern standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

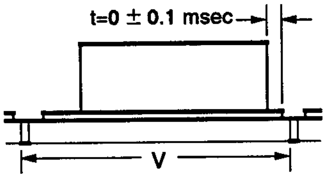


Fig. 7-11.

Check on the TV monitor

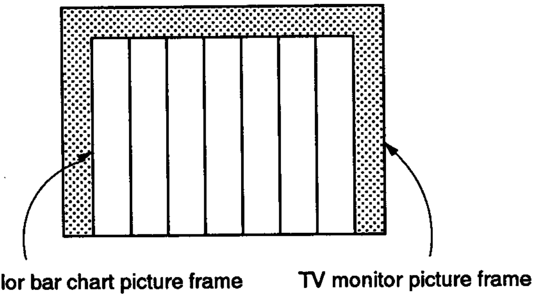

Color bar chart picture frame
TV monitor picture frame

Fig. 7-12.

### 16. IRIS Level Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Color bar standard picture frame |
| Measurement Point | Pin ⑪ of CN701 (IRIS OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | F |
| Adjustment Address | 63 (AGC MIN) |
| Specified Value | A=200 ± 5 mV |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 63, and adjust so that the IRIS OUT signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

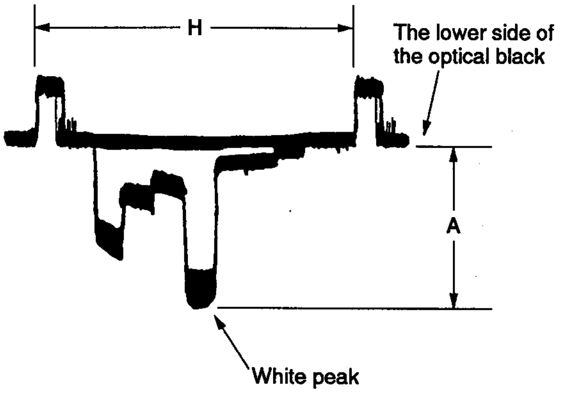


Fig. 7-13.

### 17. MAX GAIN Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Color bar standard picture frame |
| Filter | ND filter 1.0 (2 sheets) and 0.4 (1 sheet), 0.1 (1 sheet) |
| Measurement Point | Pin ⑱ of CN701 (CAM Y) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | F |
| Adjustment Address | 64 (AE MIN L) |
| Specified Value | A=260 ± 5 mV |

Adjusting method:

1) Place the ND filter 2.5 (1.0+1.0+0.4+0.1) on the lens.
2) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 64, and adjust so that the CAM Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

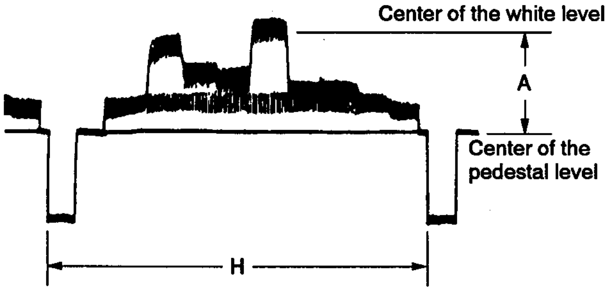


Fig. 7-14.

## 18. IRIS IN/OUT Adjustment

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Measurement Point | DDS display of the EVF or TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 39 (AWB IRIS IN)<br>3A (AWB IRIS OUT) |

Adjusting method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL data display)
3) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.8 shutter mode setting)
4) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and set to D39.
5) Set data: D39 to page: F, address: 39, and press the PAUSE button of the adjusting remote control unit.
6) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.5 shutter mode setting)
7) Read the DDS display data and set to D3A.
8) Set data: D3A to page: F, address: 3A, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the ND0.5 shutter mode)

## 19. Pre-white Balance Adjustment

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjustment Page | F |
| Adjustment Address | 33 (R CONT REF),<br>34 (B CONT REF) |
| Specified Value | The center of the white luminance point should lie within the circle with a diameter of 1mm and whose center is the principle point |

Adjusting method:

1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200K preset mode setting)
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Change the data of addresses:33 and 34 of page: F alternately, and coincide the white luminance point to the principle point.
   **Note:** Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not written to the memory.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

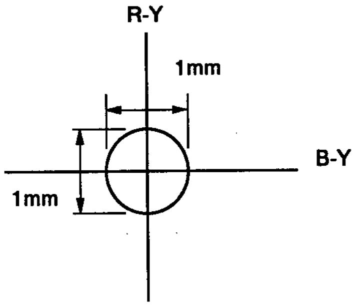


Fig. 7-15.

## 20. Color Reproduction Adjustment

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjustment Page | F |
| Adjustment Address | 18 (CORE B–Y GAIN),<br>19 (CORE R–Y GAIN),<br>1A (CORE R–Y HUE),<br>1B (CORE B–Y HUE) |
| Specified Value | All color luminance points should settle within each color reproduction frame. |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
3) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
4) Change the data of addresses 18 to 1B of page: F, and settle each color luminance point in each color reproduction frame.
   **Note:** Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not be written to the memory.
5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01 and press the PAUSE button of the adjustment remote control unit.
   (Release of the adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

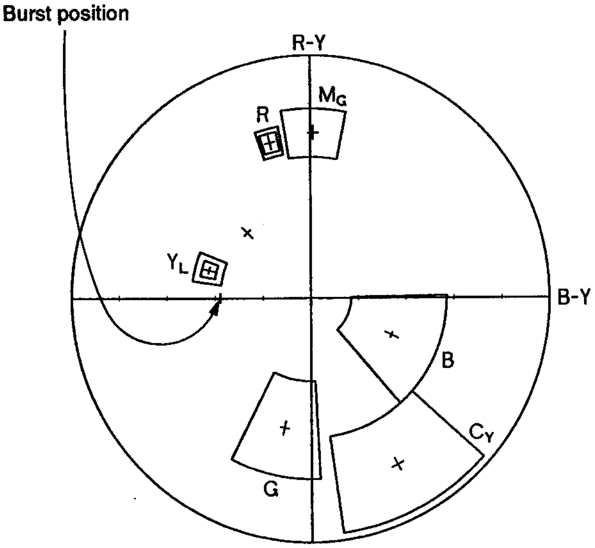


Fig. 7-16.

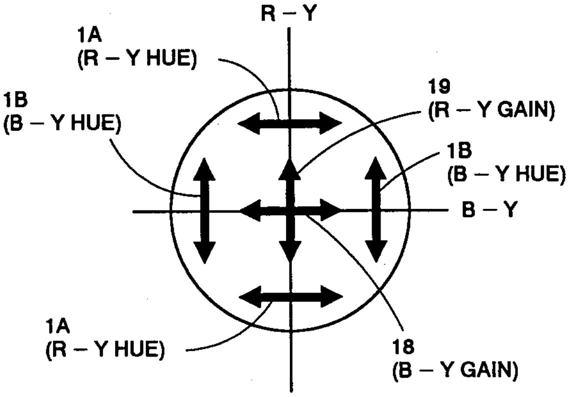


Fig. 7-17. Direction of the Movements of the Adjustment Address and Luminance Point

### 21. Auto White Balance Preset Adjustment

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Adjustment Page | F |
| Adjustment Address | 2D (R REF L), 2E (R REF H),<br>2F (G REF L), 30 (G REF H),<br>31 (B REF L), 32 (B REF H) |

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Check that the data of page: 6, address: 09 is 00.
   (Auto white balance preset adjustment possible display)
3) Set data: 11 to page: 6, address: 00, and wait at least 2 seconds.
   (Camera adjustment mode 2 setting)
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (3200K preset data take in preparation mode)
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (When the 3200K preset data is taken in, the data will be automatically input to addresses 2D to 32 of page F.)
7) Check that the data of page: 6, address: 09 is 01.
   (Auto white balance preset adjustment completion display)

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

### 22. Auto White Balance Adjustment

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Filter | Filter C14 for color temperature correction |
| Measurement Point | Check with the DDS display on the EVF or TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 35 (AWB NORM R)<br>36 (AWB NORM B) |
| Specified Value | R ratio 2A80 ± 40<br>B ratio 5A80 ± 40 |

**Note:** Check that "Auto White Balance Preset Adjustment" have been completed.

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Set data: D0 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance adjustment mode setting)
4) Set data: 82 to page: F, address: AF.
   (R ratio display mode setting)
5) Change the data of page: F, address: 35, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2A80 ± 40.
6) Press the PAUSE button of the adjusting remote control unit.
7) Set data: 83 to page: F, address: AF.
   (B ratio display mode setting)
8) Change the data of page: F, address: 36, and adjust the average value of the DDS display data to 5A80 ± 40.
9) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the white balance adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

## 23. White Balance Check

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Filter | Filter C14 for color temperature correction<br>ND filter 1.0 and 0.3 |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Specified Value | Fig. 7-18. A to C |

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode 2 setting)
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Indoor white balance mode setting)
4) Check that the center of the white luminance point is within the circle shown in Fig. 7-18.A.
(Indoor white balance check)
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance mode setting)
6) Set data: 01 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance high speed tracking mode setting)
7) Set data: 91 to page: F, address: AF (R, B ratio (M) display mode setting), and check that the top 2 digits and bottom 2 digits of the DDS display are 3D to 43. Or check that the center of the white luminance point is within the circle shown in Fig. 7-18. A.
8) Place the C14 filter on the lens.
9) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. B.
(Auto white balance outdoor mode check)
10) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
11) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. C.
(Auto white balance outdoor mode check)

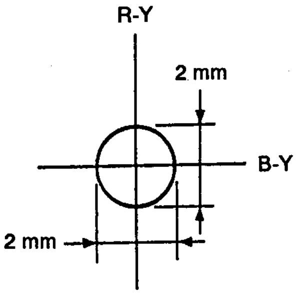


Fig. 7-18. A

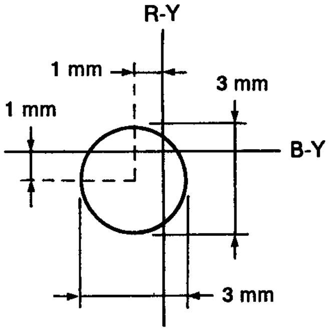


Fig. 7-18. B

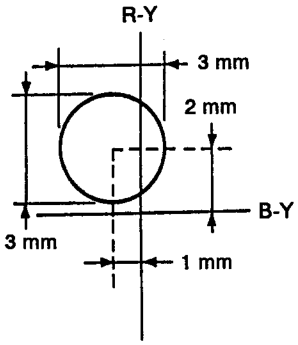


Fig. 7-18. C

Processing after completing adjustments

1) Set data: 10 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
(Release of the auto white balance fast tracking mode)
2) Set data: 10 to page: 6, address: 00.
(Release of camera adjustment mode 2)
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button.

## 24. Linear Matrix Adjustment

| | |
|---|---|
| Subject | Color bar standard picture frame |
| Filter | Filter C14 for color temperature correction |
| Measurement Point | DDS display on the EVF or TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 3D (DMAT HUE)<br>3E (DMAT GAIN) |

**Note 1:** Check that position that was set in the color bar chart picture frame "15. Picture Frame Setting" is maintained, before beginning adjustments.

Adjusting method:

1) Remove the filter C14 for color temperature correction.
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Color bar data sampling mode setting
   1. Set data: F1 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   2. Set data: 2E to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Check that the colors on the monitor display at the color modulation stop mode have disappeared)
4) Specifying the Yellow position
   1. Set data: C9 to page: 1, address: E6.
   2. Set data: B6 to page: 1, address: E7.
5) Set data: 02 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (R–Y data display mode setting)
6) Read the average value of the DDS display data (Note 2), and set to $Y_1$.
7) Specifying the Red position
   1. Set data: 59 to page: 1, address: E6.
   2. Set data: 6D to page: 1, address: E7.
8) Select page: F and read the average value of the DDS display data (Note 2), and set to $R_1$.
9) Place the filter C14 for color temperature correction on the lens. (Ensure that the picture frame of the chart does not shift at this time.)
10) Specifying the yellow position.
    1. Set data: C9 to page: 1, address: E6.
    2. Set data: B6 to page: 1, address: E7.
11) Select page: F and read the average value of the DDS display data (Note 2), and set to $Y_2$.
12) Specifying the Red position
    1. Set data: 59 to page: 1, address: E6.
    2. Set data: 6D to page: 1, address: E7.
13) Select page: F and read the average value of the DDS display data (Note 2), and set to $R_2$.
14) Convert $Y_1$, $R_1$, $Y_2$, $R_2$ to decimal notation to obtain $Y_1'$, $R_1'$, $Y_2'$ and $R_2'$.
    (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table")
15) Calculate $X_1'$ from the following equation (decimal notation calculation).
    $X_1' = Y_2' - Y_1'$
16) Calculate $D_{3D}$ from the following table
    ($D_{3D}$ is hexadecimal notation)

| $X_1'$ value | $D_{3D}$ |
|---|---|
| $-1 \leqq X_1' \leqq 1$ | F0 |
| $X_1' > 1$ | F1 |
| $X_1' < -1$ | FF |

17) Set data: $D_{3D}$ to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.
18) Calculate $X_2'$ from the following equation (decimal notation calculation).
    $X_2' = R_2' - R_1'$
19) Calculate $D_{3E}$ from the following table.

| $X_2'$ value | $D_{3E}$ |
|---|---|
| $X_2' \geqq 0$ | 00 |
| $0 > X_2' \geqq -1$ | 01 |
| $-1 > X_2'$ | 02 |

20) Set data: $D_{3E}$ to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the sampling mode)
2) Set data: 2C to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Color modulation ON mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Release of the R–Y data display mode)
4) Turn the main power supply (6.3V) off.

**Note 2:** The right two digits of the display data at the bottom right of the EVF or monitor TV. The R–Y data is above 80. When the DDS display data is below 80, set data: 01 to page F, address: AF and press the PAUSE button of the adjusting remote control unit.

### 25. VIDEO OUT Level Check

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Video output terminal (Terminated at 75 Ω) |
| Measuring Instrument | Oscilloscope |
| Specified Value | Y level=680 ± 40 mV<br>SYNC level=285 ± 20 mV<br>BURST level=280 ± 30 mVp-p |

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

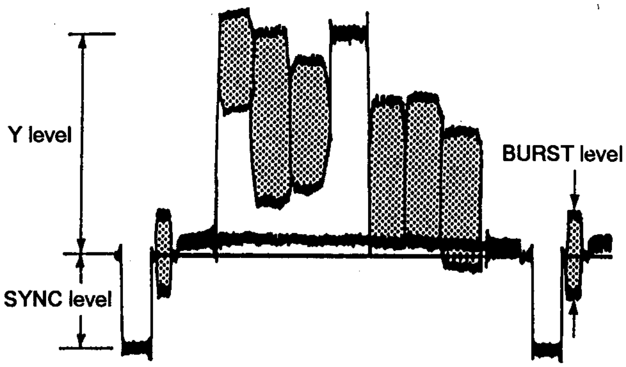


Fig. 7-19.

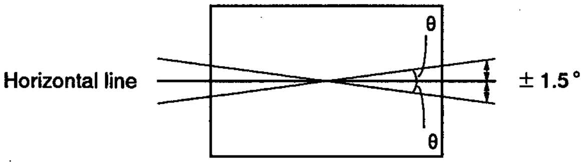
## 7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

### 7-3-1. Horizontal Slant Adjustment

| | |
|---|---|
| Model | Playback |
| Signal | Alignment tape:<br>For checking operations (WR5-5NSP)<br>Monoscope section |
| Specified Value | Refer to Fig. 7-21. |

Adjusting method:

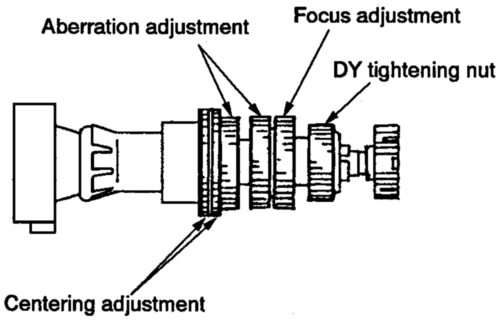
1) Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Loosen the DY (deflection yoke) tightening nut.
3) Rotate DY, and adjust the image so that it is horizontal.
4) Tighten the DY tightening nut.
   (Do not tighten it too tightly.)



θ
Horizontal line
± 1.5°
θ

Specified value: The image should be within ± 1.5° of the horizontal line.

Fig. 7-21.



Aberration adjustment
Focus adjustment
DY tightening nut
Centering adjustment

Fig. 7-22.

### 7-3-2. Centering Adjustment

| Model | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Monoscope section |
| Specified Value | Refer to Fig. 7-23. |

Adjusting method:
1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 7-22.)

   **Note:** As the centering position changes due to earth magnetism, rotate it 360 ° in the horizontal direction, and adjust with the center section of the modifying position.

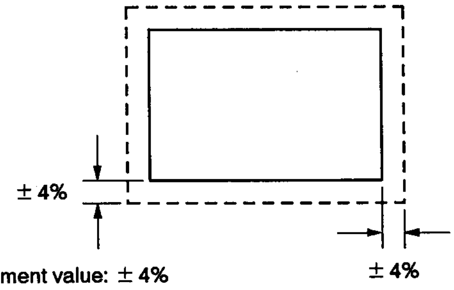


Fig. 7-23.

### 7-3-3. Focus Adjustment

| Model | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Monoscope section |

Adjusting method:
1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 7-22.)

### 7-3-4. Aberration Adjustment

| Model | E-E |
|---|---|
| Signal | Dot pattern |
| Specified Value | Refer to Fig. 7-24. |

Adjusting method:
1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

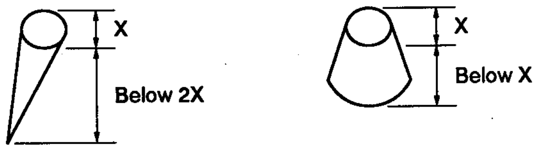


Fig. 7-24.

### 7-3-5. Horizontal Oscillation Frequency Adjustment (VF-42 board)

| Model | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP) |
| Measurement Point | Positive pole terminal of C516 |
| Measuring Instrument | Digital voltmeter or oscilloscope (DC range) |
| Adjustment Element | RV501 |
| Specified Value | 2.60 ± 0.05 Vdc |

Adjusting method:
1) Adjust to 2.60 ± 0.05 Vdc using RV501.

### 7-3-6. Horizontal Amplitude Adjustment (VF-42 board)

| | |
|---|---|
| Model | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Monoscope section |
| Adjusting Element | C504 |
| Specified Value | 6 ± 2% |

Adjusting method:

1) Rotate RV502, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV504 so that the brightness is the normal level.
3) Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 2% (Left and right totals). (Refer to Fig. 7-26.)

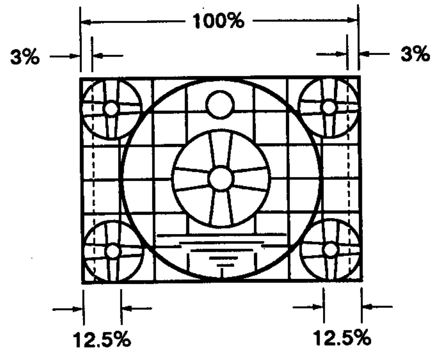
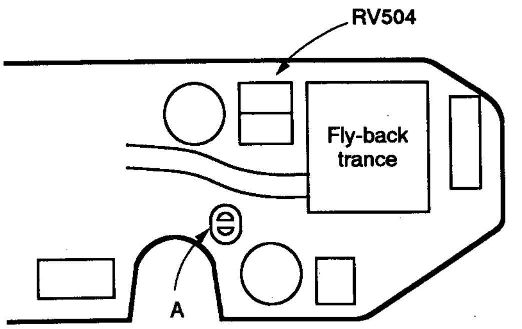


Fig. 7-25.



VF-42 board (section side)

| Section A | Size H |
|---|---|
| Open | Small |
| Short | Big |

Fig. 7-26.

### 7-3-7. Vertical Amplitude Adjustment (VF-42 board)

| | |
|---|---|
| Model | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Monoscope section |
| Adjusting Element | RV502 |
| Specified Value | 5 ± 2% |

Adjusting method:

1) Adjust RV502 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

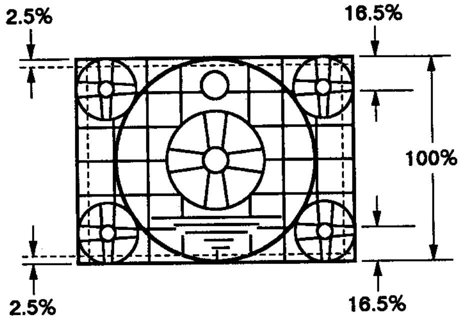


Fig. 7-27.

### 7-3-8. Brightness, Contrast Adjustments (VF-42 board)

| | |
|---|---|
| Model | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Monoscope section |
| Adjusting Element | Brightness: RV504<br>Contrast: RV503 |

Adjusting method:

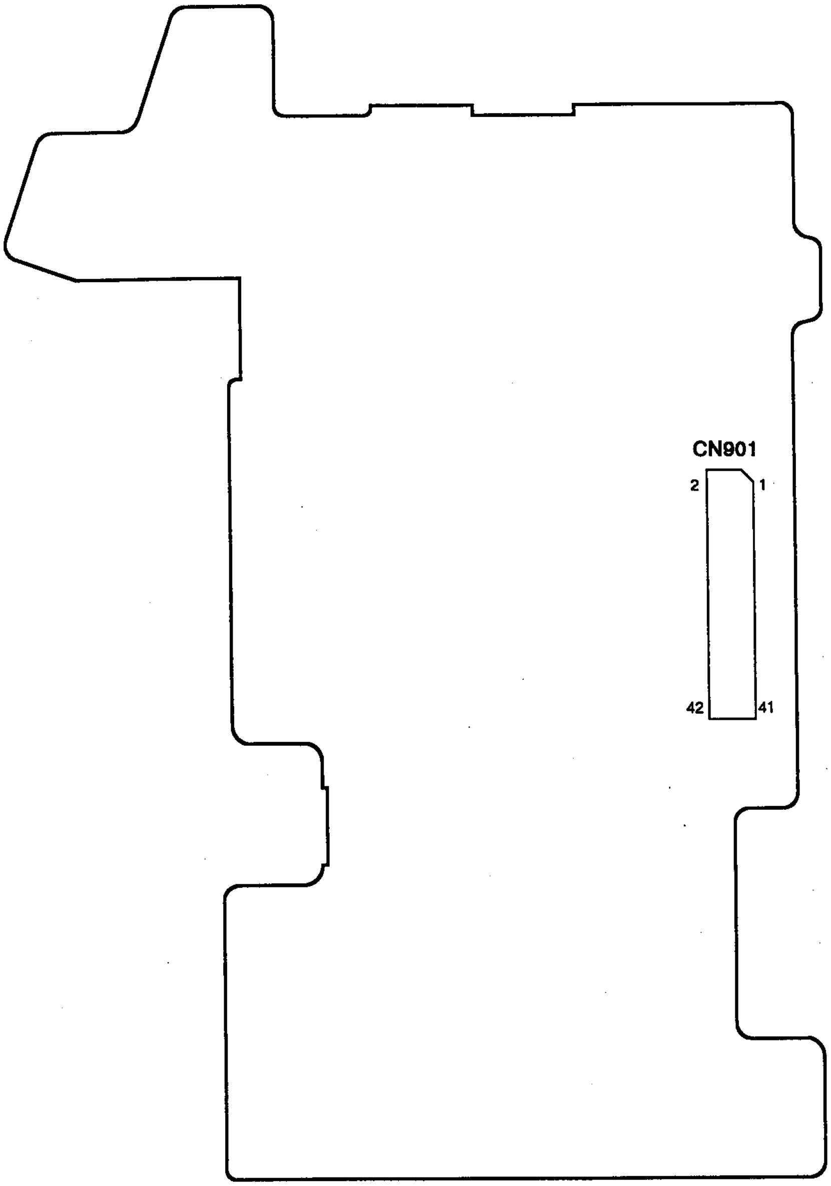
1) Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

### 7-3-9. Horizontal Amplitude, Vertical Amplitude, Focus Check

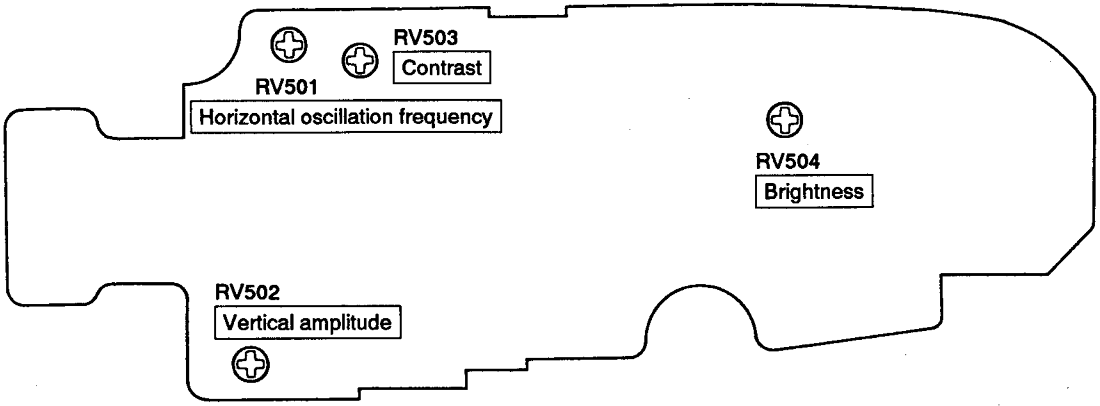
"7-3-6. Horizontal Amplitude Adjustment" and "7-3-7. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform [7-3-8. Brightness, Contrast Adjustments] again. Moreover, check the focus, and if it found to be vague, perform "7-3-3. Focus Adjustment" and "7-3-4. Aberration Adjustment".

## 7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

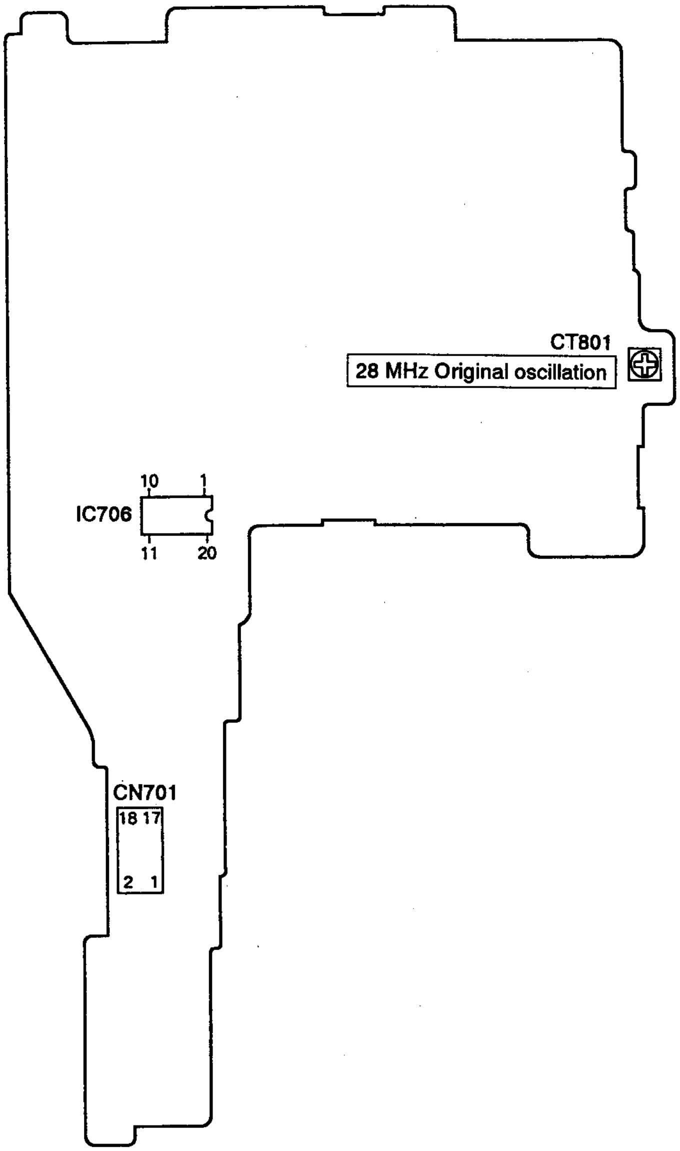
### DD-48 BOARD (COMPONENT SIDE)


CN901
2
1
42
41

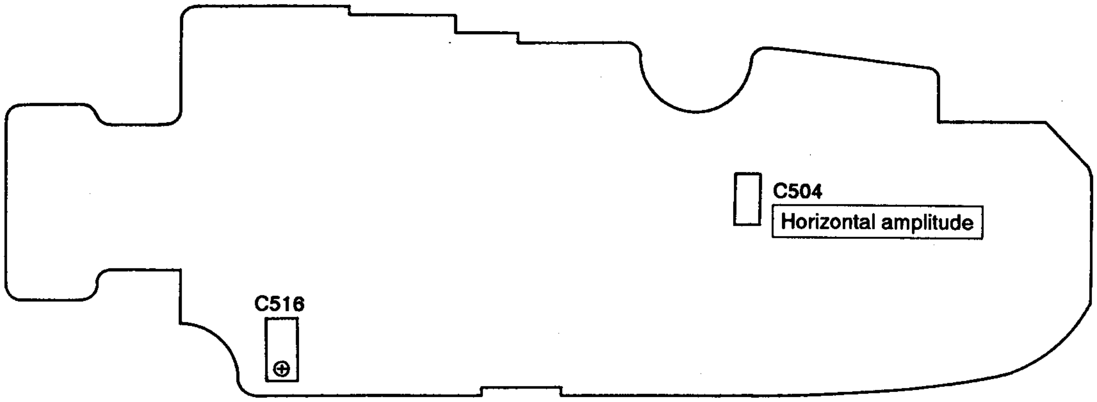
### VF-42 BOARD (COMPONENT SIDE)


RV503
Contrast
RV501
Horizontal oscillation frequency
RV504
Brightness
RV502
Vertical amplitude

## VC-122 BOARD (CONDUCTOR SIDE)


CT801
28 MHz Original oscillation
IC706
10
1
11
20
CN701
18 17
2 1

## VF-42 BOARD (CONDUCTOR SIDE)


C504
Horizontal amplitude
C516

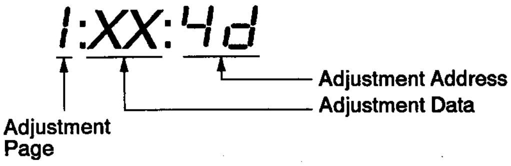
# SECTION 8
# MECHANICAL SECTION ADJUSTMENTS

**For Mechanical Adjustments**
Refer to the separate volume of mechanical adjustment "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ (A Mechanism)" for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-973-199-11)
For setting of the track shift mode, however, refer to the following.

## 8-1. SETTING THE TRACK SHIFT MODE

**Note:** Camera part and video part should have been installed.

**[Setting Method]**
1) Set the adjustment commander to the HOLD ON side.
2) Set page: 1, address: 01 and data: 01, and then release the protector.
3) Set page: D and address: 01.
4) Set adjustment data to 03 (test mode 3) by PLAY or STOP button.
   (When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3).)
5) Set to the HOLD OFF side in order to set the normal mode.



## 8-2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   CH1: VS-95 board CN002 pin ③ (PB RF)
   CH2: VS-95 board CN002 pin ④ (SWP)
3) Play back the tracking alignment tape (WR5-1NP: 8-967-995-02).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet sides. If not flat, make adjustment as follows. (Refer to Fig. 8-1 and 8-2)

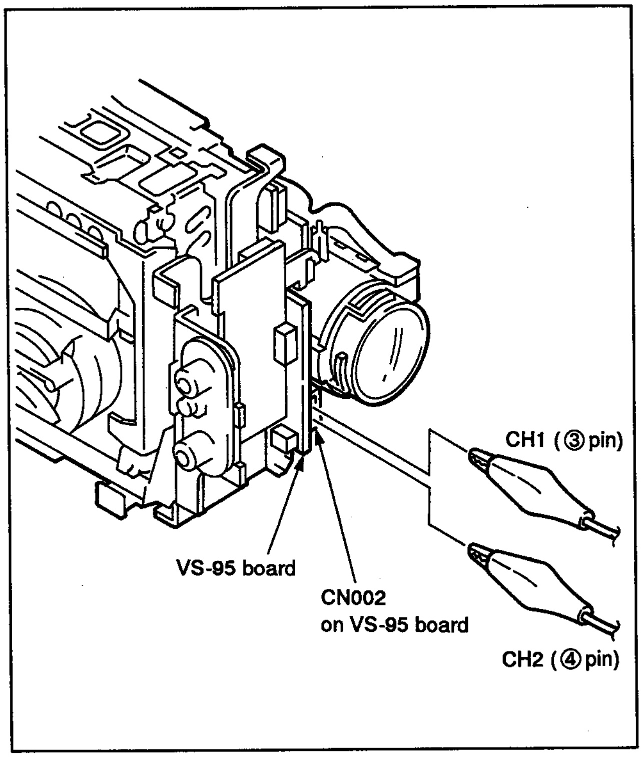


Fig.8-1.

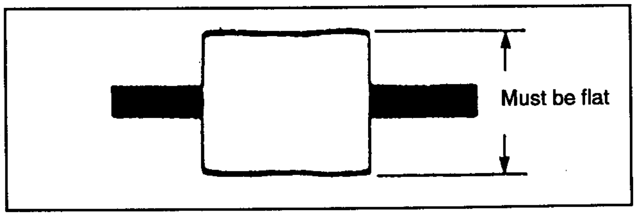


Fig.8-2.

### 9-1-3. How to Set the REC Mode

1. REC key forbidden accept mode cancel
   1. Connect the adjustment remote controller to the REMOTE terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjustment remote controller.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to 4B [6B].[Note 1] (REC key forbidden accept mode cancel)
   6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2. REC mode setting
   1. Connect the collector of Q200 on the VS-95 board and GND with a jumper wire. (CCD delay (IC154) active mode setting)
   2. Turn on the HOLD switch of the adjustment remote controller.
   3. Select the page: 1 address: A3, and set data to 01.
   4. Select the page: 1 address: 0B, and set data to C8. (Line input mode setting)
   5. Turn off the HOLD switch of the adjustment remote controller.
   6. Press REC buttons of the adjustment remote controller.
   7. Remove the jumper wire and perform "3. Procedure after completed the adjustment", after completing adjustment.

3. Procedure after completed the adjustment
   Be sure to return the mode to REC key forbidden accept mode after adjustment.
   1. Connect the adjustment remoter controller to the REMOTE terminal.
   2. Turn on the power.
   3. Turn on HOLD switch of the adjustment remote controller.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to 4A [6A].[Note 1] (Setting of the REC key forbidden accept mode)
   6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

**Note 1:** No mark : US, Canadian Model
[ ] : E model

### 9-1-4. Precautions upon adjustment

The EVF (Electronic viewfinder) is not required for adjusting the video section.
Remove the following connector when removing the EVF section.

1. VS-95 board CN102 (6 PIN)

The front panel section assembly is required for adjusting the video section. Remove the following connectors when removing the front panel section assembly.

1. AU-138 board CN601 (5 PIN)

The cabinet (R) is required for adjusting the video section. Use the extension cord (J-6082-196-A) when adjusting the video section.

### 9-1-5. Set-up during Adjustment

As the video signal obtained from the pattern generator is used as an adjustment signal during electric adjustments, ensure that this video output signal is within the specification. Connect the oscilloscope to pin ㉜ of IC151 on the VS-95 board, and check that the amplitude of the sync signal of the video signal is approximately 0.15V, the amplitude of the video section is approximately 0.35V, the amplitude of the burst signal is approximately 0.15V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66. The video signal (color bar) used for electric adjustments is shown in Fig. 9-2.

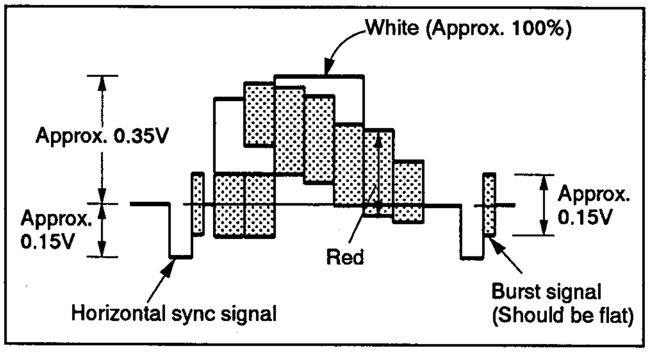


Fig. 9-2. Color Bar Signal of the Pattern Generator

### 9-1-6. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment.

If the type of tape to be used for checking operations is not specified, use whichever type.

| Name | Record -ing mode | Tape type | Tape speed | Recording contents | | Usage |
|---|---|---|---|---|---|---|
| | | | | **Video area** | **PCM area** | |
| Tracking<br>WR5-1NP | L | MP | SP | CH2: Signal for 1 MHz tape path adjustment | | Tape path adjustment<br>Switching position adjustment |
| Video frequency characteristics<br>WR5-6N | L | MP | SP | RF sweep 0 to 10 MHz<br>Marker<br>1, 3.58, 5.5, 7 MHz | | Frequency characteristics adjustment |
| Operation check<br>(SP mode)<br>WR5-5NSP | L | MP | SP | • Video signal<br>Color bar 4 minutes<br>Monoscope 4 minutes<br>• Audio signal (AFM)<br>400 Hz 60% modulation | • Audio signal (PCM)<br>Monoscope section<br>20 Hz 20 sec.<br>400 Hz 20 sec. } Color bar section<br>14 kHz 20 sec.<br>Repeated 4 times<br>1 kHz 4 minutes | Checking operations |
| Operation check<br>(LP mode)<br>WR5-4NL | L | MP | LP | • Video signal<br>Color bar 4 minutes<br>Monoscope 4 minutes<br>• Audio signal (AFM)<br>400 Hz 60% modulation | | |

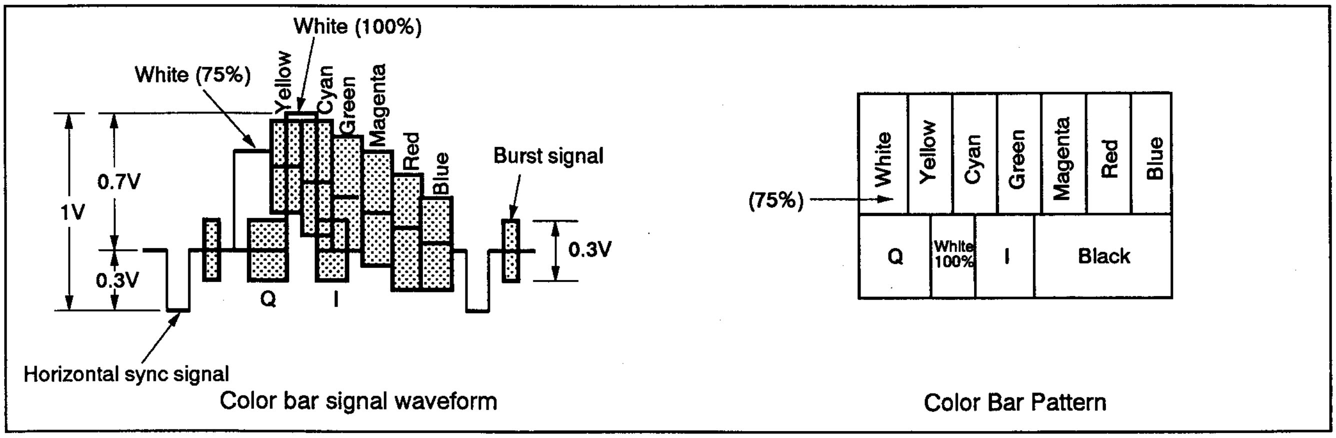
**Note:** Recording mode
L ······· Conventional mode
E ······· hi8 (hi band) mode

Tape type
MP····· Particle type metal tape
ME····· Evaporated type metal tape

Table 9-1.

Fig. 9-3. shows the 75% color bar signals recorded on the alignment tape.

**Note:** Measure using the video input/output terminal (Terminated at 75 Ω )



White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
0.7V
1V
0.3V
0.3V
Q
I
Horizontal sync signal
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
White 100%
I
Black

Color bar signal waveform

Color Bar Pattern

Fig. 9-3. Color Bar Signals of the Alignment Tape

### 9-1-7. Output Level and Impedance

Video outputPin jack
Output signal: 1 Vp-p, 75 unbalanced, sync negative

Audio outputPin jack
Specified output: –7.5 dBs
Output impedance: Below 2.2 kΩ

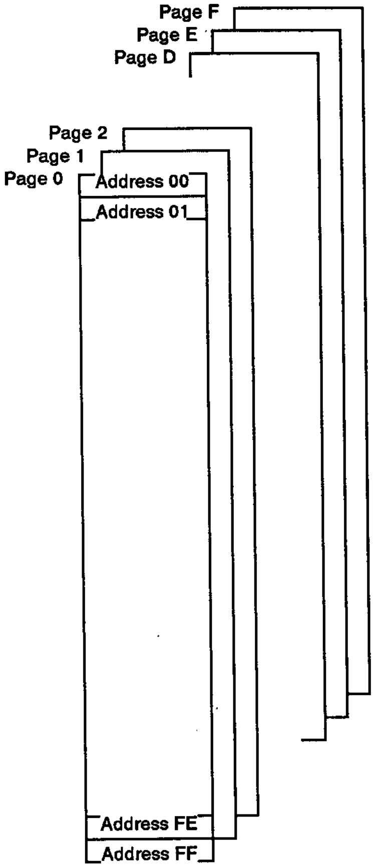
## 9-1-8. Service Mode

### 1. Setting the Service mode

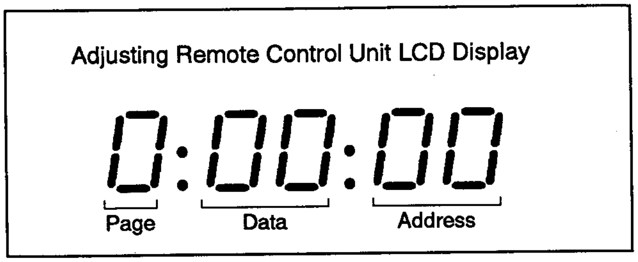
The service mode consists of the adjustment mode which adjusts the EVR and the test mode which displays the condition of the unit.

The unit can be shifted into the test mode and adjustment mode by connecting the adjusting remote control unit (set the HOLD switch to the HOLD side).

(1) Service LANC memory map

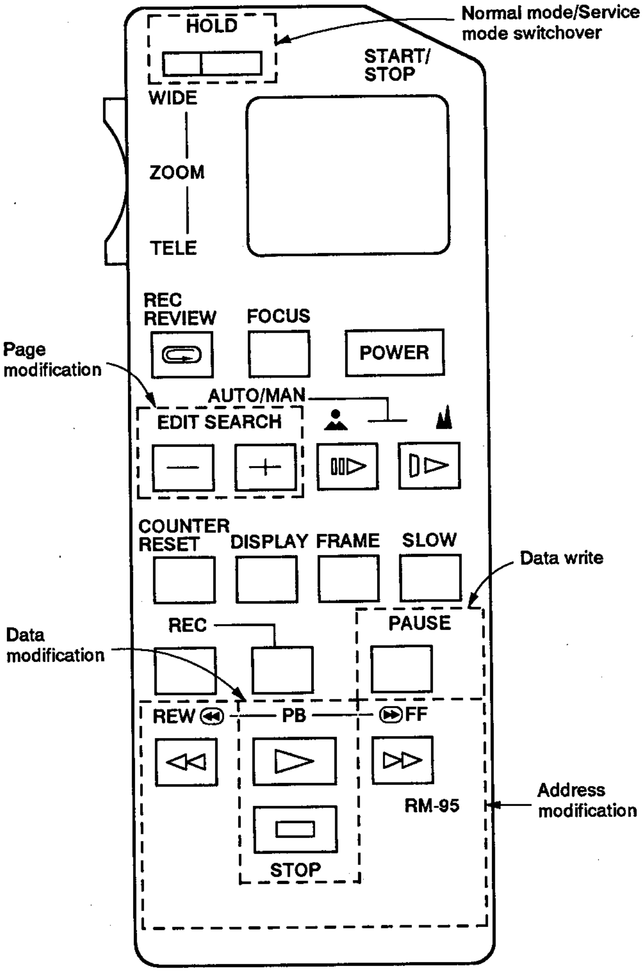


Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF



Adjusting Remote Control Unit LCD Display
0:00:00
Page
Data
Address

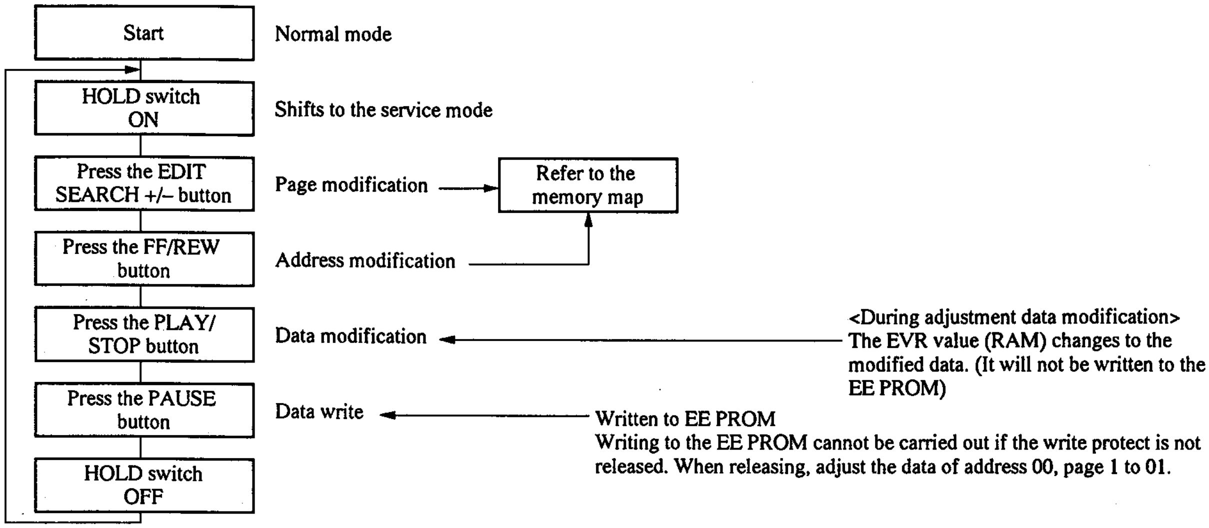
Adjusting remote control unit RM-95 (J-6082-053-B)



HOLD
Normal mode/Service mode switchover
START/ STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page modification
AUTO/MAN
EDIT SEARCH
COUNTER RESET
DISPLAY
FRAME
SLOW
Data write
REC
PAUSE
Data modification
REW
PB
FF
RM-95
Address modification
STOP

| Page | Page allocation | Description |
|---|---|---|
| 0 | Not used | |
| 1 | Mode Control RAM, I/O | RAM and I/O interface data memory area required for operating the mode controller. Data is not held when the power is turned off because this area is not ROM. |
| 2~4 | Mechanical Control RAM, I/O | RAM and I/O memory area of the mechanical controller. |
| 5 | Not used | |
| 6~8 | Camera Control RAM, I/O | RAM and I/O memory area of the camera control. |
| 9 | Not used | |
| A | Camera Control RAM, I/O | RAM and I/O memory area of the camera control. |
| B, C | Not used | |
| D | VTR EE-PROM | ROM memory area of the VTR part. Data of this area is held by EE-PROM when the power is turned off. Releasing protect is required for changing data. |
| E | Not used | |
| F | Camera EE-PROM | ROM memory area of the camera part. Data of this area is held by EE•P•ROM when the power is turned off. |

(2) Shifting to the Service Mode Using the Adjusting Remote Control Unit


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press the EDIT SEARCH +/– button
Page modification
Refer to the memory map
Press the FF/REW button
Address modification
Press the PLAY/ STOP button
Data modification
Press the PAUSE button
Data write
HOLD switch OFF

<During adjustment data modification>
The EVR value (RAM) changes to the modified data. (It will not be written to the EE PROM)

Written to EE PROM
Writing to the EE PROM cannot be carried out if the write protect is not released. When releasing, adjust the data of address 00, page 1 to 01.

| **Command Name** | **Command Function** | **Normal LANC command** |
|---|---|---|
| Page Up | Page +1 | Edit Search + |
| Page Down | Page –1 | Edit Search – |
| Direc Page Set | Sets the specified page | Event Clear |
| Address Up | Address +1 | Fast Forward |
| Address Down | Address –1 | Rewind |
| Data Up | Data +1 | Play Back |
| Data Down | Data –1 | Stop |
| Store | Write the data to the EE PROM. RAM | Pause |

## 2. Types of Self-diagnostic Feature

| MODE | | Contents |
|---|---|---|
| TEST | Camera adjustment | Refer to Camera Adjustment |
| | Switching position adjustment | Refer to each adjustment page |
| | Battery DOWN adjustment | |
| | Video, Audio adjustment | |
| ADJUST | Pass Adjustment track shift | When adjusting tape pass, set this mode and shift the tracking. |
| | Emergency STOP inhibition | Detection of emergency is inhibited. This allows the following items.<br>• Power is not turned off when the battery is ended.<br>• SP/LP is not automatically distinguished.<br>• Emergence is not detected except for TOP/END detection of the TAPE. |
| | Read of emergence code | The following functions are added to the emergency display function currently in use.<br>① The lithium battery is not required because to memorize into EE-PROM is allowed.<br>② The first emergency and the last emergency are memorized.<br>③ The mode when the emergency is generated is memorized, in addition to the emergency contents. |
| | Motor single check | Rotating in forward direction, reverse direction, stopping of each motor can be separately controlled.<br>• Drum motor<br>• Capstan motor<br>• Loading motor |
| | Function switch check | The acceptance of the function switch of the unit can be confirmed by designating an address. On the contrary, RM-95 can command the substitution for the function switch of the unit. |
| | Mechanical switch check | The contents of the mechanical switch and the mode switch can be confirmed. |
| | Sensor check | The following sensor is input by performing A/D converting, and the A/D converted value can be confirmed.<br>TOP sensor, End sensor, S REEL FG, T REEL FG, Thermistor for SWP correction, DEW sensor. |
| | Reception contents check of wireless remote control | The received code contents of the remote control code can be confirmed. |

## 3. Page D Write Protect

Release/set the page D write protect.

| | |
|---|---|
| Page 1 | Address 00 |

| Data | Function |
|---|---|
| 00 | Normal (Write protect condition) |
| 01 | Write protect release |

## 4. Page F Write Protect

Release/set the page F write protect.

| | |
|---|---|
| Page 6 | Address 00 |

| Data | Function |
|---|---|
| 10 | Normal (Write protect condition) |
| 01 | Write protect release |

## 5. Test Mode Setting

Each type of test mode is set/released. Release the protect (page: 1, address: 00, data: 01), before setting the data.

| Page D | Address 01 |
|---|---|

| Data | Function |
|---|---|
| 00 | Normal |
| 01 | Test mode 1<br>Various emergency inhibition and release<br>Drum, capstan, loading motor, reel, tape top, end, DEW<br>SP/LP automatic distinction inhibition, manual switchover<br>5 minutes pause release inhibition<br>Power off inhibition • release by battery end |
| 02 | Test mode 2<br>1'CH frequency response adjustment (Not used)<br>SP/LP automatic distinction inhibition, manual switchover |
| 03 | Test mode 3<br>Track shift<br>Plays back the track shift<br>Rear lock distinction inhibition during PB<br>SP/LP automatic distinction inhibition, manual switchover |
| 04 | Test mode 4<br>Rear lock mode<br>Rear lock playback is performed<br>SP/LP automatic distinction inhibition, manual switchover |
| 05 | Test mode 5<br>SP/LP automatic distinction inhibition, manual switchover |

※ This address data will be recorded on the non-volatile memory by pressing the PAUSE button on the adjusting remote control unit. Take note, as when this happens, the test mode will not be released even if the main power is turned off (6.3 Vdc).

※ Be sure to return the data of this address data to 00 after completing adjustments/repairs.

## 6. Emergency code

Troubles (errors) can be checked.

| Page D | Address 06 |
|---|---|

First emergency code

……The first error code generated

| Page D | Address 07 |
|---|---|

Last emergency code

…… The last error code generated (this data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 06 and 07 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the remote control unit after resetting the data.

| Code | Error condition |
|---|---|
| 00 | No error |
| 01 | Loading motor error |
| 02 | Reel error during unloading |
| 03 | Other reel errors |
| 04 | Capstan error |
| 05 | DRUM FG error during drum start up |
| 06 | DRUM PG error during drum start up |
| 07 | DRUM FG error during drum regular condition |
| 08 | DRUM PG error during drum regular condition |
| 09 | DRUM Phase error during drum regular |

## 7. Emergency mode

The operation mode during an error outbreak can be checked.

| | |
|---|---|
| Page D | Address 08 |

First emergency mode
……The operation mode when the first error is generated

| | |
|---|---|
| Page D | Address 09 |

Last emergency mode
……The operation mode when the last error is generated
(This data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 08 and 09 to 00 after completing repairs/adjustments.

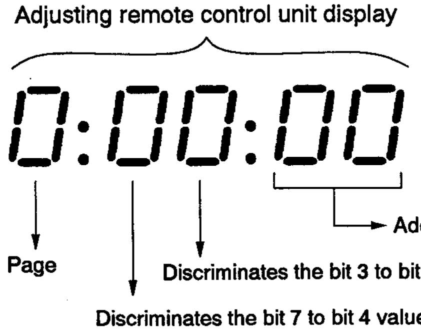
※ When rewriting data, be sure to press the PAUSE button of the remote control unit after setting the data.

※ Addresses 08 and 09 of page 0 and addresses 08 and 09 of page D have the same functions.

| Code | Error condition |
|---|---|
| 00 | BEFOR INITIALIZE |
| 01 | EJECTED |
| 02 | NORMAL STOP |
| 03 | FF |
| 04 | NORMAL REC |
| 06 | NORMAL PB |
| 07 | PB PAUSE |
| 12 | LOADING |
| 14 | REC PAUSE |
| 26 | X1 |
| 27 | 1/5 SLOW |
| 31 | UNLOADING |
| 36 | –X1 |
| 37 | –1/5 SLOW |
| 46 | CUE |
| 47 | 1/10 SLOW |
| 56 | REVIEW |
| 57 | –1/10 SLOW |
| 62 | STOP TAPE END |
| 66 | X2 |
| 67 | FRAME |
| 72 | STOP TAPE TOP |
| 76 | –X2 |
| 77 | –FRAME |
| 83 | REWIND |
| 85 | REC REVIEW(+) |
| 95 | REC REVIEW(–) |
| A2 | EMERGENCY STOP |
| A5 | EDIT SEARCH(+) |
| B1 | EMERGENCY UNLOADING |
| B2 | STOP EMERGENCY 1 |
| B5 | EDIT SEARCH(–) |
| C2 | STOP EMERGENCY 2 |
| E2 | STOP NO CASSETTE |
| F5 | EDIT PAUSE |

## 8. Bit value Discrimination

It is necessary to discriminate the bit value by the adjusting remote control unit display data for the following items. Discriminate if the bit value is "1" or "0" using the following table.


Adjusting remote control unit display
0:00:00
Address
Page
Discriminates the bit 3 to bit 0 value
Discriminates the bit 7 to bit 4 value

| | Remote Control Unit Display | Bit Value | | | |
|---|---|---|---|---|---|
| | | bit 3 or bit 7 | bit 2 or bit 6 | bit 1 or bit 5 | bit 0 or bit 4 |
| | 0 | 0 | 0 | 0 | 0 |
| | 1 | 0 | 0 | 0 | 1 |
| | 2 | 0 | 0 | 1 | 0 |
| | 3 | 0 | 0 | 1 | 1 |
| | 4 | 0 | 1 | 0 | 0 |
| | 5 | 0 | 1 | 0 | 1 |
| | 6 | 0 | 1 | 1 | 0 |
| | 7 | 0 | 1 | 1 | 1 |
| Ⓐ→ | 8 | 1 | 0 | 0 | 0 |
| | 9 | 1 | 0 | 0 | 1 |
| | A(A) | 1 | 0 | 1 | 0 |
| | B(b) | 1 | 0 | 1 | 1 |
| | C(c) | 1 | 1 | 0 | 0 |
| | D(d) | 1 | 1 | 0 | 1 |
| Ⓑ→ | E(E) | 1 | 1 | 1 | 0 |
| | F(F) | 1 | 1 | 1 | 1 |

**(Example)** When the remote control unit display data is "8E", the bit values of bit 7 to bit 4 can be discriminated from column Ⓐ, and that of bit 3 to bit 0 can be discriminated from column Ⓑ.

## 9. Check of Tape Distinction Switch, etc.

| | |
|---|---|
| Page 1 | Address 3E |

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| | | | | $\overline{\text{REC PROOF}}$ | ME/$\overline{\text{MP}}$ | Hi8/$\overline{\text{Normal}}$ | |

"1"=Recording impossible
"0"=Recording possible

"1"=ME tape
"0"=MP tape

"1"=Hi8 mode playback
"0"=Normal mode playback

| | |
|---|---|
| Page 1 | Address 23 |

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| | | | | | $\overline{\text{CC DOWN}}$ | | |

"0"=During cassette compartment lock

| | |
|---|---|
| Page 1 | Address 3D |

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| V MUTE | A MUTE | VA PB MODE | JOG | PB CLOG | REC CLOG | SYNC DET | LP/$\overline{\text{SP}}$ |

"1"=LP mode playback
"0"=SP mode playback

"1"=SYNC is detected
"0"=SYNC is not detected

"1"=CLOG is detected
"0"=Normal

"1"=When the PB RF signals are being playback normaly
"0"=Others

"1"=JOG mode
"0"=Other

"1"=Playback mode
"0"=Others

"1"=AUDIO MUTE: ON
"0"=AUDIO MUTE: OFF

"1"=VIDEO MUTE: ON
"0"=VIDEO MUTE: OFF

| | |
|---|---|
| Page 1 | Address 42 |

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| | | | | | | DEW | |

Bit1:
"0"=Dew outbreak
"1"=Others

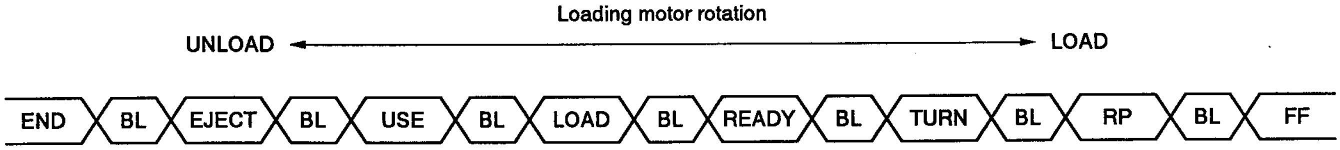
### 10. Mode Switch Check

The mode switch position (mechanical section condition) can be checked.

| | |
|---|---|
| Page 1 | Address 3E |

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| MSW 0 | MSW 1 | MSW 2 | | | | | |

| MSW 0 | MSW 1 | MSW 2 | POSITION | FUNCTION | $\overline{\text{CC DOWN}}$ |
|---|---|---|---|---|---|
| 1 | 1 | 1 | BL | Interval of each position | |
| 0 | 1 | 1 | END | FULL END processing (T side lock removal) | 1 |
| 0 | 0 | 1 | EJECT | Cassette compartment ejection | 1 |
| 1 | 0 | 1 | USE | EJECTED (Unskate end) | 1 |
| 0 | 0 | 1 | LOAD | LOADING (Skate in) | 0 |
| 1 | 0 | 0 | READY | NORMAL STOP position | 0 |
| 1 | 1 | 0 | TURN | OFF of pinch roller only with PB ↔ REV (oscillating position) | 0 |
| 0 | 1 | 0 | RP | PB, REC, RVS, REV, REW | 0 |
| 0 | 0 | 0 | FF | FF/CUE | 0 |


Loading motor rotation
UNLOAD
LOAD
END
BL
EJECT
BL
USE
BL
LOAD
BL
READY
BL
TURN
BL
RP
BL
FF

## 11. Mechanism Control A/D Port Input Voltage Check

| | |
|---|---|
| Page 4 | Address 14 |

Checking method:

1) Set data: 02 to page: 4, address: 0E.
   (A/D conversion processing active)
2) Set the data in the following table to page: 4, address: 13, and select the A/D port to be displayed.

| Data | A/D Port |
|---|---|
| 00 | Pin (62): AN0 (T REEL FG) |
| 01 | Pin (61): AN1 (S REEL FG) |
| 02 | Pin (60): AN2 (ATF ERROR) |
| 03 | Pin (59): AN3 (BATT SENS) |
| 04 | Pin (58): AN4 ($\overline{\text{DEW}}$) |

3) Check the data of page: 4, address: 14.

| Adjusting Remote Control Unit Display Data | A/D Port Input Voltage |
|---|---|
| FF to 00 | Approx. 5 Vdc to 0 Vdc |

## 12. Tape Top/End Sensor Condition Check

| | |
|---|---|
| Page 4 | Address 0A |

Checking method:

1) Set data: 10 to page: 4, address: 0E.
   (Tape top/end sensor condition sampling processing active)
2) Check the data of page: 4, address: 0A.

| Adjusting Remote Control Unit Display Data | Tape Top/End Sensor Condition |
|---|---|
| 0 0 | Tape present (Middle of tape) |
| 0 1 | Tape end |
| 1 0 | Tape top |
| 1 1 | No tape |

Tape end sensor condition
Tape top sensor condition

"0"=Non-active (Not receiving light)
"1"=Active (Receiving light)

## 13. Battery Voltage Check

| | |
|---|---|
| Page 4 | Address 10 |

| Adjusting Remote Control Unit Display Data | Battery Voltage |
|---|---|
| FF | Approx. 10 Vdc |
| F0 | Approx. 9.4Vdc |
| E0 | Approx. 8.8Vdc |
| D0 | Approx. 8.2Vdc |
| C0 | Approx. 7.5Vdc |
| B0 | Approx. 6.9Vdc |
| A0 | Approx. 6.3Vdc |
| 90 | Approx. 5.6Vdc |
| 80 | Approx. 5.0Vdc |

## 14. Individual Operations of the Drum, Capstan, and Loading Motor

| | |
|---|---|
| Page 4 | Address 11 |

1) Adjust the mechanical section to the loading completion condition.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: 4, address: 0E.
   (Control permission from the adjusting remote control unit of the motor)
4) By setting the data in the following table to page: 4, address: 11, the corresponding motors can be operated individually.
5) After checking the operations, turn off the main power (6.3 Vdc).

| Data | Operation |
|---|---|
| 00 | Normal |
| 02 | Drum forward rotation |
| 04 | Drum reverse rotation |
| 06 | Capstan forward rotation |
| 08 | Capstan reverse rotation |
| 0A | Loading motor forward rotation |
| 0C | Loading motor reverse rotation |
| 01 | All motors stop |
| 03 | |
| 05 | |
| 07 | |
| 09 | |
| 0B | |
| 0D | |
| 0F | |

### 15. Mode control micro processor key matrix check

The key input can be checked.

| | |
|---|---|
| Page 1 | Address 68~6D |

| | Bit7 | Bit6<br>(K IN 6) | Bit5<br>(K IN 5) | Bit4<br>(K IN 4) | Bit3<br>(K IN 3) | Bit2<br>(K IN 2) | Bit1<br>(K IN 1) | Bit0<br>(K IN 0) |
|---|---|---|---|---|---|---|---|---|
| Address 68<br>(K OUT 0) | | LENS COVER OPEN<br>(MF-191 S973) | VTR POWER<br>(VK-27 S977) | EDIT SEARCH<br>(CUE)<br>(VK-27 S981) | PAUSE<br>(VK-27 S984) | EDIT SEARCH<br>(+)<br>(VK-27 S981) | EJECT<br>(DD-48 S901) | |
| Address 69<br>(K OUT 1) | | BUZZER ON/OFF<br>(ED-35 S986) | CAMERA POWER<br>(VK-27 S977<br>SW-205 S519) | FF<br>(VK-27 S983) | PLAY<br>(VK-27 S980) | REW<br>(VK-27 S979) | STOP<br>(VK-27 S976) | |
| Address 6A<br>(K OUT 2) | | NIGHT<br>(CF-32 S997) | | | EDIT SEARCH<br>(REV)<br>(VK-27 S978) | EDIT SEARCH<br>(–)<br>(VK-27 S978) | COUNTER RESET<br>(CF-32 S995) | EDIT ON/OFF<br>(ED-35 S990) |
| Address 6B<br>(K OUT 3) | | PORTREIT<br>(CF-32 S997) | | | TIME<br>(CF-32 S996) | DATE<br>(CF-32 S993) | | |
| Address 6C<br>(K OUT 4) | | SPORTS<br>(CF-32 S997) | | AUTO FOCUS ON/OFF<br>(MF-191 S971) | | | | |
| Address 6D<br>(K OUT 5) | | HIGH SPEED SHUTTER<br>(CF-32 S997) | AREA<br>(ED-35 S989) | DST or SUMMER TIME<br>(ED-35 S987) | | FADER<br>(CF-32 S991) | START/ STOP<br>(SW-205 S520) | REMOTE COMMANDER<br>(ED-35 S988) |

"1"=key switch ON
"0"=key switch OFF

### 16. Wireless Remote Control Unit Reception Content Check

| | |
|---|---|
| Page 1 | Address 1E |

| Wireless remote control unit key pressed | Data |
|---|---|
| None | FF |
| TELE | 9A |
| WIDE | 9B |
| Start/stop | 99 |
| Rewind | 1B |
| Fast forward | 1C |
| Stop | 18 |
| Playback | 1A |
| Data screen | 5A |
| Pause | 19 |
| SLOW | 23 |

### 17. EDIT Switch, Remote Commander Switch Check

| | |
|---|---|
| Page 1 | Address 0A |

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| REC MODE (SP/LP) | REMOTE COMMANDER | | EDIT | | | | |

"1"=OFF
"0"=ON

"1"=EDIT ON
"0"=EDIT OFF

"1"=LP
"0"=SP

### 18. White Balance Mode and Focus Mode Display/Switchover

| | |
|---|---|
| Page 1 | Address 9A |

The mode can be switched when the data of page: 1, address: A3 is set to 04.

| Data | White Balance Mode |
|---|---|
| ∗ 1 | INDOOR |
| ∗ 2 | OUTDOOR |
| ∗ 3 | HOLD |
| ∗ 6 | AUTO |

| Data | Focus Mode |
|---|---|
| 0 ∗ | Manual |
| 1 ∗ | Automatic |

∗ : 0 to F

### 19. LCD, LED Check, etc.

| | |
|---|---|
| Page 1 | Address A3 |

| Data | Mode |
|---|---|
| 00 | Normal |
| 01 | Key input prohibited |
| 04 | Camera function renewal prohibited |

## 20. Page D Address List

**Note 1:** The adjustment data initial value is the data to be input before performing video section adjustment (page D), when the page D data has been erased due to some cause.

**Note 2:** The data listed in the adjustment data memo column are the fixed data.
Check that these data have not been accidentally rewritten, after completing adjustments.

*1 No mark : US, Canadian model
[ ] : E model

| Address | Name | Function<br>[ ] Indicate the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 00 | Category code | Not used | | |
| 01 | Test mode | | 00 | 00 |
| 02 | Destination flag | | 4A[6A]*1 | 4A[6A]*1 |
| 03 | BATT END | Battery end adjustment | 8C | |
| 04 | SW POSITION | SW POSITION adjustment | 00 | |
| 05 | SW POSITION | SW POSITION adjustment | 0A | |
| 06 | EMERGENCY code (FIRST) | Error code and mode are memorized.<br>Rewrite the data of these addresses to 00 after repairs/adjustments | 00 | 00 |
| 07 | EMERGENCY code (LAST) | | 00 | 00 |
| 08 | EMERGENCY mode (FIRST) | | 00 | 00 |
| 09 | EMERGENCY mode (LAST) | | 00 | 00 |
| 0A | SR DATA (MP Normal SP) | CXA1207 serial data | 24 | 24 |
| 0B | SR DATA (MP Normal LP) | CXA1207 serial data | 3E | 3E |
| 0C | SR DATA (ME Hi8 SP) | CXA1207 serial data | 24 | 24 |
| 0D | SR DATA (ME Hi8 LP) | CXA1207 serial data | 3E | 3E |
| 0E | SR DATA (ME Normal SP) | CXA1207 serial data | 24 | 24 |
| 0F | SR DATA (ME Normal LP) | CXA1207 serial data | 3E | 3E |
| 10 | SR DATA (MP Hi8 SP) | CXA1207 serial data | 24 | 24 |
| 11 | SR DATA (MP Hi8 LP) | CXA1207 serial data | 3E | 3E |
| 12 | SR DATA (EDIT ON Normal) | CXA1207 serial data | 3E | 3E |
| 13 | SR DATA (EDIT ON Hi8) | CXA1207 serial data | 3E | 3E |
| 14 | CAM TITLE BLU R-Y | Camera titler color adjustment [Blue]. Not used | | |
| 15 | CAM TITLE BLU B-Y | Camera titler color adjustment [Blue]. Not used | | |
| 16 | CAM TITLE GRN R-Y | Camera titler color adjustment [Green]. Not used | | |
| 17 | CAM TITLE GRN B-Y | Camera titler color adjustment [Green]. Not used | | |
| 18 | CAM TITLE CYN R-Y | Camera titler color adjustment [Light blue]. Not used | | |
| 19 | CAM TITLE CYN B-Y | Camera titler color adjustment [Light blue]. Not used | | |
| 1A | CAM TITLE RED R-Y | Camera titler color adjustment [Red]. Not used | | |
| 1B | CAM TITLE RED B-Y | Camera titler color adjustment [Red]. Not used | | |
| 1C | CAM TITLE VIO R-Y | Camera titler color adjustment [Violet]. Not used | | |
| 1D | CAM TITLE VIO B-Y | Camera titler color adjustment [Violet]. Not used | | |
| 1E | CAM TITLE YEL R-Y | Camera titler color adjustment [Yellow]. Not used | | |
| 1F | CAM TITLE YEL B-Y | Camera titler color adjustment [Yellow]. Not used | | |
| 20 | Permission plug | | 04 | 04 |
| 21 | Adjustment plug | FORCED VTR ON, CAM ON etc<br>DATA: MODE<br>01: FORCED CAMERA POWER ON<br>02: FORCED VTR POWER ON | 00 | 00 |
| 22~29 | | Not used | | |

Table 9-2 (1).

| Address | Name | Function<br>[ ] Indicate the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 2A | SLOW ADJ (FOWARD) | | 00 | 00 |
| 2B | SLOW ADJ (REVERSE) | | 00 | 00 |
| 2C | STILL ADJ | | 00 | 00 |
| 2D | BATT REMAIN LEVEL 1 | Amount of remaining battery 1 | A0 | |
| 2E | BATT REMAIN LEVEL 2 | Amount of remaining battery 2 | 99 | |
| 2F | BATT REMAIN LEVEL 3 | Amount of remaining battery 3 | 94 | |
| 30~42 | | Not used | | |
| 43 | 1-ch M.T NORMAL | 1 ch playback frequency characteristic adjustment [IC158 ②] | C0 | |
| 44 | | | | |
| 45 | 2-ch M.T NORMAL | 2 ch playback frequency characteristic adjustment [IC158 ③] | C0 | |
| 46 | REC C RF (EE) | REC C RF level adjustment (EE) [IC156 ⑩] | B8 | |
| 47 | REC C RF (PB) | REC C RF level adjustment (PB) [IC156 ⑩] | 00 | |
| 48 | RF CONT (ME) | ATF RF level (ME) [IC158 ⑤] | 64 | 64 |
| 49 | RF CONT (MP) | ATF RF level (MP) [IC158 ⑤] | 70 | 70 |
| 4A | EE LEVEL | EE level adjustment [IC156 ⑮] | 70 | 70 |
| 4B | | Not used | | |
| 4C | COMB ADJ | Chroma comb filter adjustment [IC156 ③] | A8 | |
| 4D | SR-IR | IR adjustment [IC156 ②] | AE | |
| 4E | Y-FM CARRIER (Hi8) | | | |
| 4F | Y-FM CARRIER (NORMAL) | Y-FM carrier frequency adjustment [IC156 ⑤] | A8 | |
| 50 | Y-FM DEVIATION (Hi8) | | | |
| 51 | Y-FM DEVIATION (NORMAL) | Y-FM deviation adjustment [IC156 ⑥] | 95 | |
| 52 | REC Y LEVEL (EE Hi8 ME) | | | |
| 53 | REC Y LEVEL (EE Hi8 MP) | | | |
| 54 | REC Y LEVEL (EE NOR ME) | REC Y recording current adjustment (ME) [IC156 ⑦] | 95 | |
| 55 | REC Y LEVEL (EE NOR MP) | REC Y recording current adjustment (MP) [IC156 ⑦] | 95 | |
| 56 | REC Y LEVEL (PB) | Playback REC Y level [IC156 ⑦] | 00 | 00 |
| 57 | PB Y LEVEL (EE) | EE PB Y level [IC158 ⑮] | 00 | 00 |
| 58 | PB Y LEVEL (Hi8) | | | |
| 59 | PB Y LEVEL (NORMAL) | Normal PB Y level adjustment [IC158 ⑮] | B0 | |
| 5A | EMPHASIS INPUT LEVEL | EE emphasis input level adjustment [IC156 ④] | A5 | |
| 5B | PB LINE LEVEL | Playback emphasis input level adjustment [IC156 ④] | AF | |
| 5C~79 | | Not used | | |
| 7A | 1.5 IR | 1.5 MHz IR adjustment [IC158 ⑥] | A0 | |
| 7B | 1.5 DEV | 1.5 MHz deviation adjustment [IC158 ⑦] | A0 | |
| 7C~FF | | Not used | | |

Table 9-2 (2)

## 9-2. POWER SYSTEM ADJUSTMENTS

### 1. Oscillator Frequency Check (DD-48 board)

| | |
|---|---|
| Mode | Camera record |
| Subject | Arbitrary |
| Measurement Point | Q903 collector |
| Measuring Instrument | Frequency counter |
| Specified Value | 510 ± 35 kHz |

Adjusting method:

1) Check that the oscillator frequency satisfies the specified value.

### 2. Power Voltage Check (DD-48 board)

| | |
|---|---|
| Mode | Camera record |
| Subject | Arbitrary |
| Measuring Instrument | Digital voltmeter |
| EVF 5V check | |
| Measurement Point | Pin ⑪ of CN901 |
| Specified Value | 4.93 ± 0.15 Vdc |
| D5V check | |
| Measurement Point | Pins ⑤ and ⑧ of CN901 |
| Specified Value | 4.92 ± 0.15 Vdc |
| D4V check | |
| Measurement Point | Pin ④ of CN901 |
| Specified Value | 3.98 ± 0.15 Vdc |
| VID 5V check | |
| Measurement Point | Pins ⑰, ⑳ of CN901 |
| Specified Value | 4.90 ± 0.15 Vdc |
| RP 5V check | |
| Measurement Point | Pin ㉒ of CN901 |
| Specified Value | 4.89 ± 0.15 Vdc |
| AU5V check | |
| Measurement Point | Pin ⑲ of CN901 |
| Specified Value | 4.90 ± 0.15 Vdc |
| CAM5V check | |
| Measurement Point | Pins ⑦ and ⑩ of CN901 |
| Specified Value | $4.86^{+0.15}_{-0.11}$ Vdc |
| CAM15V check | |
| Measurement Point | Pin ⑫ of CN901 |
| Specified Value | 15.05 ± 0.4 Vdc |
| CAM –9V check | |
| Measurement Point | Pin ⑨ of CN901 |
| Specified Value | –8.5 ± 0.4 Vdc |

## 9-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

### 1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to “Page D address list” in “9-1-8. Service Mode”.

| | |
|---|---|
| Mode | E-E |
| Signal | Arbitrary |
| Adjustment Page | D |
| Adjustment Address | 00 to 7D |

Input method:

1) Release the write protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address.
   (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

## 2. Battery End Adjustment

| | |
|---|---|
| Mode | Camera record |
| Signal | Arbitrary |
| Measurement Point | LCD display of the adjusting remote control unit |
| Measuring Instrument | |
| Adjustment Page | D |
| Specified Value | 03 (BATT END)<br>2D (BATT REMAIN LEVEL 1)<br>2E (BATT REMAIN LEVEL 2)<br>2F (BATT REMAIN LEVEL 3) |

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

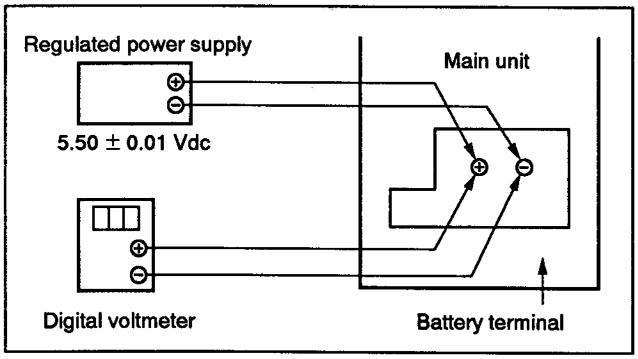


Fig. 9-4.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: D, address: 01.
   (Test mode 1 setting)
4) Set to the camera recording mode.
5) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
6) Select page: 4, address: 10, read the adjusting remote control unit display data, and set to DEND.
7) Set data DEND to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
8) Convert DEND to decimal to obtain DEND´. (Refer to Table 7-6. "Hexadecimal notation – decimal notation conversion table")
9) Obtain the adjustment data (decimal) by following formula (decimal notation calculation), convert to hexadecimal and enter the data into each adjustment address.
   Address: 2D D2D´=DEND´+18
   Address: 2E D2E´=DEND´+14
   Address: 2F D2F´=DEND´+8
   **Note:** After setting the data, be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
10) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (Test mode 1 release)
11) Perform "Battery Down Check".

## 3. Battery Down Check

| | |
|---|---|
| Mode | Camera record |
| Subject | Arbitrary |

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

Checking method:

Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.70 ± 0.01 Vdc.
4) Check that the 🪫 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.58 ± 0.01 Vdc.
6) Check that the 🪫 mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
7) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.42 ± 0.01 Vdc.
8) Check that the 🪫 mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

## 9-4. SERVO SYSTEM ADJUSTMENTS

### 1. Switching Position Adjustment (VS-95 board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For tracking adjustment (WR5-1NP) |
| Measurement Point | CH1: Pin ④ of CN002 (RF SWP)<br>CH2: Pin ③ of CN002 (PB RF) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 04 (SW POSITION)<br>05 (SW POSITION) |
| Specified Value | $t_1$=0 ± 10 μsec |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 0A to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "$t_1$". (Coarse adjustment)
4) Press the PAUSE button of the remote control unit.
5) Change the data of page: D, address: 04, and adjust so that the switching position ($t_1$) becomes the specified value. (Fine adjustment)
6) Press the PAUSE button of the adjusting remote control unit.

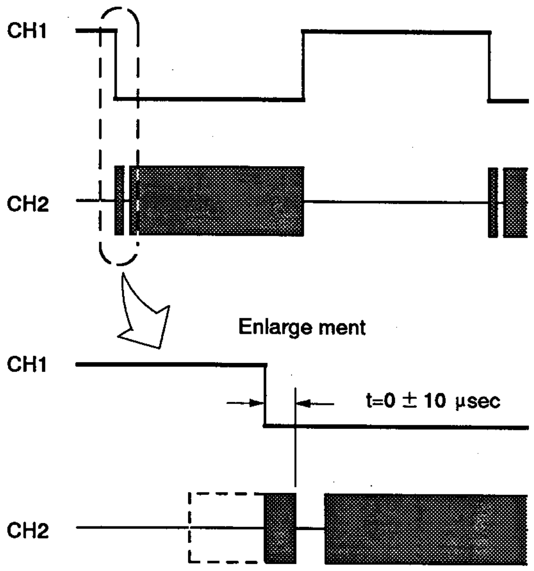


Fig. 9-5.

## 9-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Fig. 9-2.

### [Adjusting procedure]

1) Playback frequency characteristic adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) EE level adjustment
5) IR adjustment
6) Y/C separation adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) PB LINE OUT level adjustment
10) Y FM carrier frequency adjustment
11) Y FM deviation adjustment
12) Chroma emphasis f0 adjustment
13) REC Y level adjustment
14) REC C level adjustment
15) REC ATF level check
16) REC AFM level check

## 1. Playback Frequency Characteristic Adjustment (VS-95 board)

**Note 1:** The adjusting element for CH2 is shown in parentheses [ ].

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For frequency characteristic adjustment (WR5-6N) |
| Measurement Point | CH1: Pin ③ of CN002<br>EXT TRIG: Pin ④ of CN002 |
| Measuring Instrument | Oscilloscope<br>TRIG SLOPE: +, [–] |
| Adjustment Page | D |
| Adjustment Address | 43 (MT 1CH) [45 (MT 2CH)] |
| Specified Value | 3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3) |

Adjusting method:

1) Confirm that the EDIT switch is OFF position.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of address: 43 [45] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.
   **Note 2:** After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.
   **Note 3:** If the waveform is not stable, set data: 03 to page: D, address: 01. (Test mode 3 setting)
   After completing adjustment, set data: 00 to page: D, address: 01.

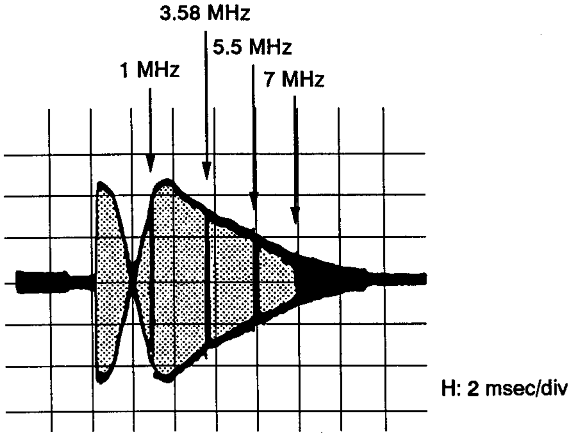


Fig. 9-6.

## 2. Flying Erase Check (VS-95 board)

| Mode | Record |
|---|---|
| Signal | Arbitrary |
| Measurement Point | Pin ② of W001 (FE (X)) |
| Measuring Instrument | Oscilloscope and frequency counter |
| Specified Value | Frequency: approx. 7.5 MHz<br>Voltage: Above 1.5 Vp-p |

**Note:** Use a MP type tape.

Checking method:

1) Check that the oscillation frequency is approx. 7.5 MHz and that the oscillation voltage is above 1.5 Vp-p.

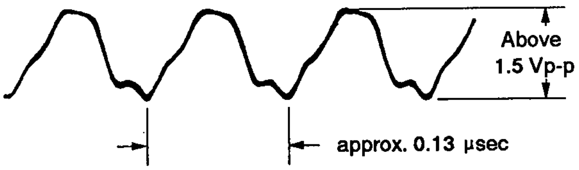


Fig. 9-7.

## 3. VXO Oscillation Frequency Check (VS-95 board)

| Mode | STOP |
|---|---|
| Signal | Color bar |
| Measurement Point | Pin ⑫ of IC152 |
| Measuring Instrument | Frequency counter |
| Specified Value | 3579545 ± 70 Hz |

**Note:** Connect the frequency counter via a high impedance (approximately 10 MΩ ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑫ of IC152 is 3579545 ± 70 Hz.

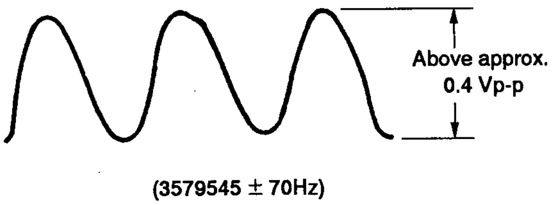


Fig. 9-8.

### 4. EE Level Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar |
| Measurement Point | Pin ② of CN101 (VIDEO OUT)^Note |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 4A (EE LEVEL) |
| Specified Value | A=1.00 ± 0.025V |

**Note:** Terminate pin ② of CN101 at 75 Ω.
After completing adjustments, remove the 75 Ω resistor.

Adjusting method:

1) Release the protect.
Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

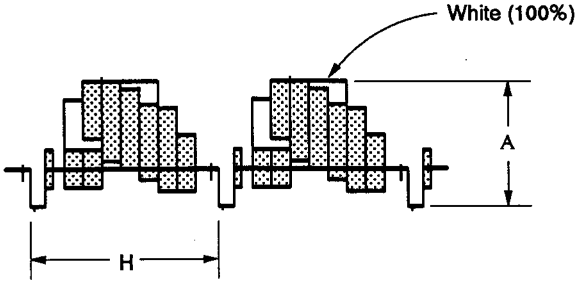


Fig. 9-9.

### 5. IR Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar |
| Measurement Point | Pin ⑦ of IC151 (Y COMB OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 4D (SR IR) |
| Specified Value | Residual chroma component (A) is minimum (below 80 mVp-p) |

Connection

1) Connect pin ⑭ of IC151 (VREF: 3.5 Vdc) or pin ② of IC159 to pin (51) of IC151 with a jumper wire.

Adjusting method:

1) Release the protect.
Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
3) Press the PAUSE button of the adjusting remote control unit.

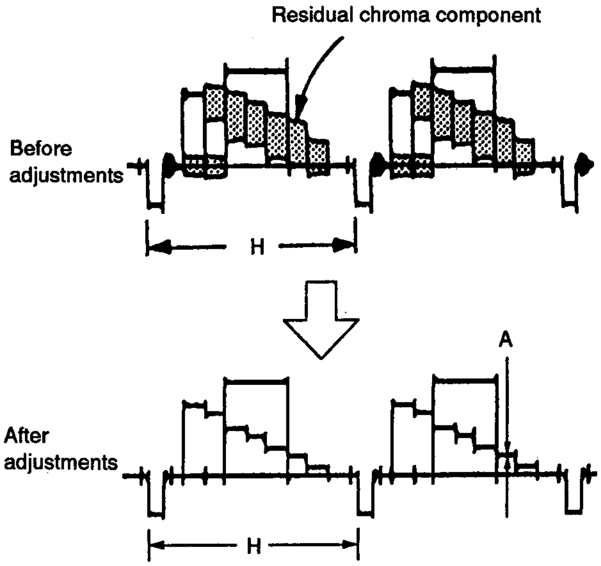


Fig. 9-10.

### 6. Y/C Separation Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar |
| Measurement Point | Pin ⑪ of IC151 (C+CD) |
| Adjusting Element | Oscilloscope |
| Measuring Instrument | RV051 (Phase) |
| Adjustment Page | D |
| Adjustment Address | 4C (Y/C SEP DL LEVEL) |
| Specified Value | Residual chroma component (A) is minimum. |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
3) Adjust RV051 so that the residual chroma component (A) becomes minimum.
5) Press the PAUSE button of the adjusting remote control unit.

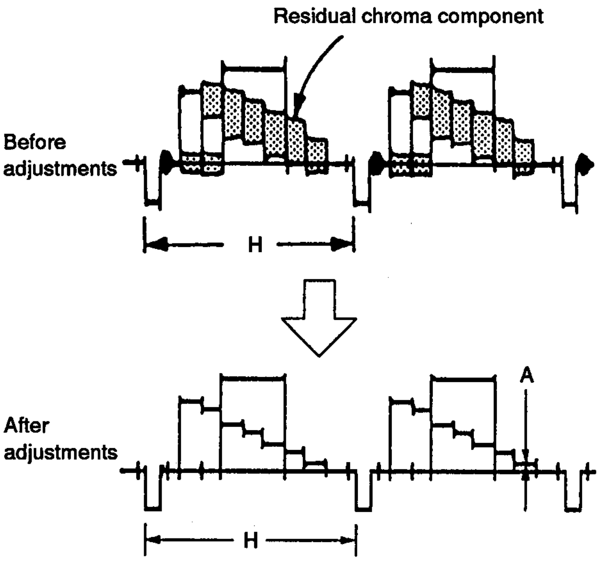


Fig. 9-11.

### 7. Emphasis Input Level Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar without burst signal |
| Measurement Point | Pin ③ of IC155 (or Pin ③ of IC151) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 5A (EMPHASIS INPUT LEVEL) |
| Specified Value | A=0.50 ± 0.025V |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

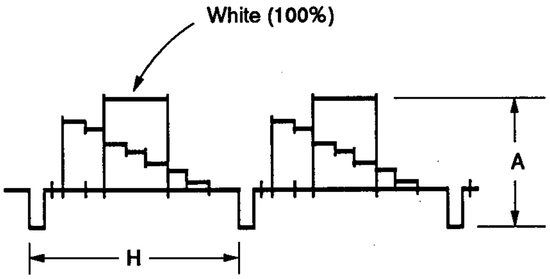


Fig. 9-12.

### 8. PB Y Level Adjustment (VS-95 board)

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Color bar section |
| Measurement Point | Pin ㉑ of IC151 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | • Normal mode<br>59 (NORMAL PB Y LEVEL) |
| Specified Value | A=0.50 ± 0.025V |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Playback the color bar section of the normal mode alignment tape (WR5-5NSP).
3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

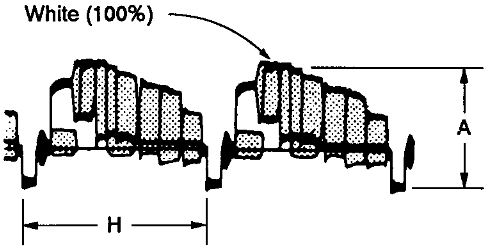


Fig. 9-13.

### 9. PB LINE OUT Level Adjustment

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP)<br>Color bar section |
| Measurement Point | Video output terminal<br>(terminated at 75 Ω ) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 5B (PB LINE LEVEL) |
| Specified Value | A=1.0 ± 0.025V |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

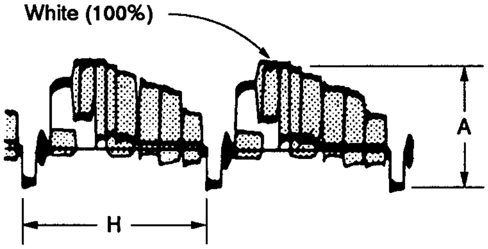


Fig. 9-14.

### 10. Y FM Carrier Frequency Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | No signal |
| Measurement Point | Pin ⑤ of IC003 (REC Y RF OUT) |
| Measuring Instrument | Frequency counter |
| Adjustment Page | D |
| Adjustment Address | 4F (Y FM CARRIER) |
| Specified Value | 4.38 ± 0.04 MHz |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Perform "Deviation Adjustment".

Pin ⑤ of IC003 waveform

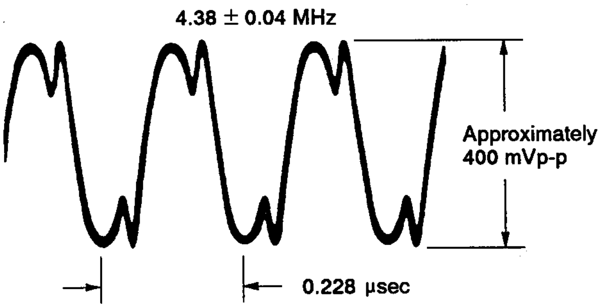


Fig. 9-15.

### 11. Deviation Adjustment (VS-95 board)

| | |
|---|---|
| Mode | Record and playback |
| Signal | Color bar |
| Measurement Point | Pin ㉑ of IC151 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 51 (Y FM DEVIATION) |
| Specified Value | A=0.50 ± 0.025V |

**Note:** Check that "Emphasis Input Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.50 ± 0.025V
5) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 2) to 4).

| Playback signal level | Changing the data |
|---|---|
| When smaller than the specified value | Increase |
| When bigger than the specified value | Decrease |

6) Press the PAUSE button of the adjusting remote control unit.

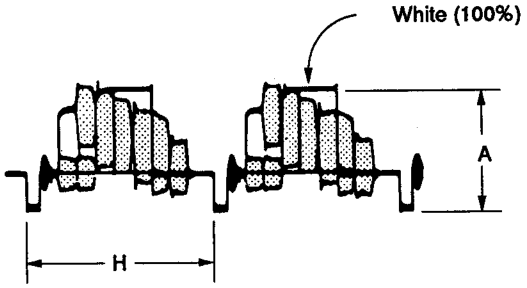


Fig. 9-16.

### 12. Chroma Emphasis $f_0$ Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar |
| Measurement Point | Pin ㉔ of IC152 |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | FL153 |
| Specified Value | Minimum $f_0$ component |

Connection:

1) Connect pin ㉔ of IC152 to GND with a 3.3 kΩ resistor (1-249-423-11).

Adjusting method

1) Adjust FL153 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

Minimize the amplitude of the latter section of the yellow section.

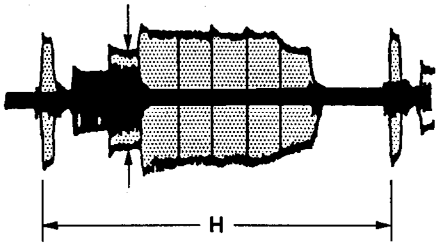


Fig. 9-17.

### 13. REC Y Level Adjustment (VS-95 board)

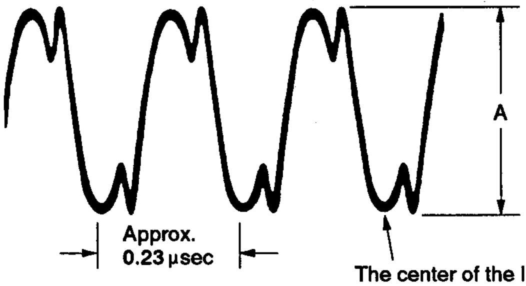
| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ⑤ of IC003 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 55 (REC Y LEVEL EE NOR MP)<br>54 (REC Y LEVEL EE NOR ME) |
| Specified Value | A=225 ± 5 mVp-p |

**Note:** Use a MP type tape.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 55, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Set the data of page: D, address: 55 to page: D, address: 54.
5) Press the PAUSE button of the adjusting remote control unit.

The center of the luminance line width of this section



The center of the luminance line width of this section

Fig. 9-18.

### 14. REC C Level Adjustment (VS-95 board)

| | |
|---|---|
| Mode | Record |
| Signal | Color bar |
| Measurement Point | Pin ③ of IC003 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 46 (REC C RF (EE)) |
| Specified Value | A=120 ± 10 mVp-p |

**Note:** Use a MP type tape.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 46, and adjust so that the REC C level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

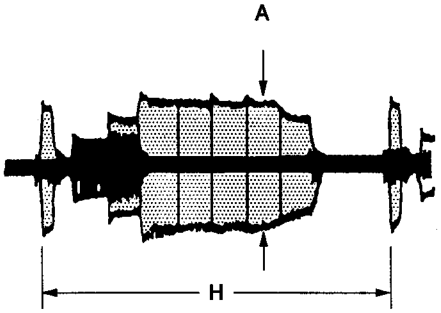


Fig. 9-19.

### 15. REC ATF Level Check (VS-95 board)

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ㉔ of IC001 (REC 1CH) |
| Measuring Instrument | Oscilloscope |
| Specified Value | A=8 ± 2 mVp-p |

**Note:** Use a MP type tape.

Connection:

1) Remove the AU-138 board CN602.

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   **Note:** Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC ATF signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

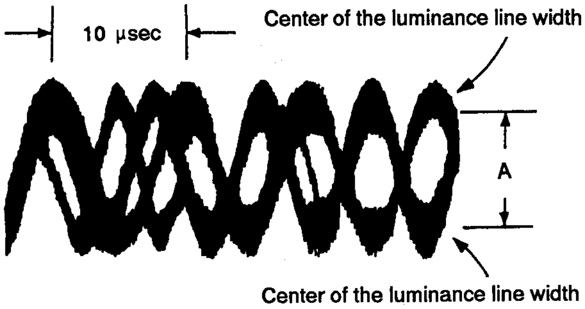

10 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 9-20.

### 16. REC AFM Level Check (VS-95 board)

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ㉔ of IC001 (REC 1CH) |
| Measuring Instrument | Oscilloscope |
| Specified Value | A=9 ± 2 mVp-p |

**Note:** Use a MP type tape.

Connection:
1) Connect Pin ⑨ of IC404 and GND with a 0.01 $\mu$F capacitor (1-101-004-00).

Checking method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   **Note:** Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC AFM signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

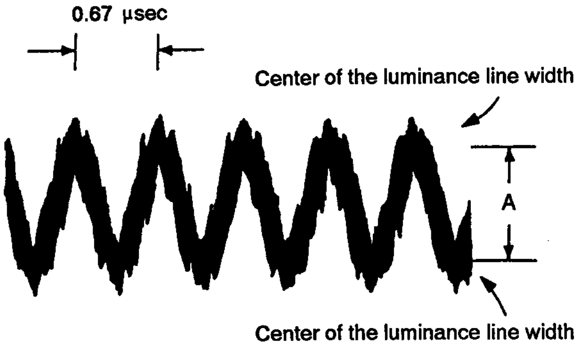

0.67 μsec
Center of the luminance line width
A
Center of the luminance line width

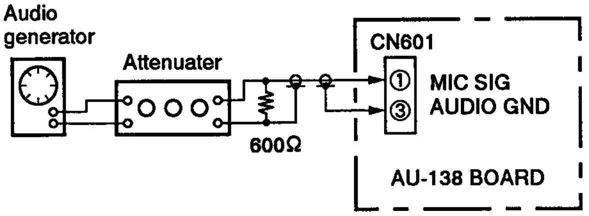
Fig. 9-21.

## 9-6. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input.

**[Connecting the measuring instruments for the audio]**
Connect the audio system measuring instruments besides the video system measuring instruments as shown in Fig. 9-22, and perform adjustments with the power switch [player] position.

- Connection of Audio generator and attenuator except for "Overall Level Characteristic, Distortion Check" and "Overall Noise Level Check".
  **Note:** Remote the MA-149 board.


Audio generator
Attenuater
600Ω
CN601
①
③
MIC SIG
AUDIO GND
AU-138 BOARD

- Connection of Audio level meter or distortion meter

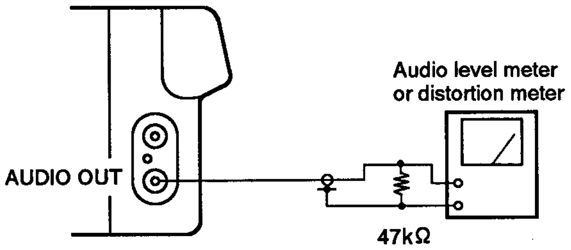

Audio level meter or distortion meter
AUDIO OUT
47kΩ

Fig. 9-22.

**[Adjustment Procedure]**
1) E-E output level check
2) IR adjustment
3) Deviation adjustment
4) Carrier frequency check
5) Recording level check
6) Overall level characteristics, distortion check
7) Overall noise level check

### 1. E-E Output Level Check (AU-138 board)

| | |
|---|---|
| Mode | Record |
| Signal | 400 Hz, –36.1 dBs, pin ① of CN601 |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Audio level meter |
| Specified Value | –7.5 ± 2 dBs |

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

### 2. IR Adjustment (AU-138 board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5NSP) |
| Measurement Point | +: Pin ⑥ of IC601<br>–: Pin ㊹ of IC601 (C629 ⊕) |
| Measuring Instrument | Digital voltmeter |
| Adjustment Page | D |
| Adjustment Address | 7A (1.5 IR) |
| Specified Value | The DC voltage difference between pins ㊹ and ⑥ is 0 ± 10 mVdc |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7A and adjust so that the DC voltage becomes 0 ± 10 mVdc.
3) Press the PAUSE button of the adjusting remote control unit.

### 3. Deviation Adjustment

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape: For checking the operation<br>(WR5-5NSP) |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 7B (1.5 DEV) |
| Specified Value | –7.5 ± 0.5 dBs |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

### 4. Carrier Frequency Check (AU-138 board)

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ㉛ of CN602 (REC AFM) |
| Measuring Instrument | Frequency counter (Note 1) |
| Specified Value | 1.500 ± 0.002 MHz |

**Note:** Use a high impedance (above 1 MΩ ) and low capacity (below 20 pF) probe.

Checking method:

1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

### 5. Record Level Check (AU-138 board)

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ㉛ of CN602 (REC AFM) |
| Measuring Instrument | Oscilloscope |
| Specified Value | A=48 ± 8 mVp-p |

Checking method:

1) Check that the 1.5 MHz carrier level satisfies the specified value.
   (Read the center of the luminance line width and note down the level read.)

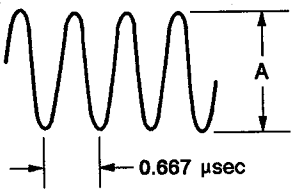


Fig. 9-23.

## 6. Overall Level Characteristic, Distortion Check

| | |
|---|---|
| Mode | Self recording/playback |
| Signal | 400 Hz, –66 dBs: Ext mic jack |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Audio level meter and distortion meter |
| Specified Value | Level: –7.5 ± 2 dBs<br>Distortion rate: Below 0.5% (Note 1) |

**Note:** 1) Value when the following filter is used

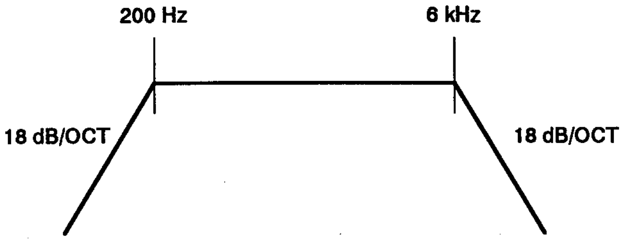


Fig. 9-24.

Checking method:
1) Input the 400 Hz, –66 dBs signal to the ext mic jack.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal is –7.5 ± 2 dBs, and that the distortion rate is below 0.5% (Note 1).

## 7. Overall Noise Level Check

| | |
|---|---|
| Mode | Self recording |
| Signal | No signal: Ext mic jack |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Audio level meter<br>(Use an IHF-A curve auditory correction filter) |
| Specified Value | Below –55.0 dBs |

Checking method:
1) Insert the shorting plug to the ext mic jack.
2) Record.
3) Playback the recorded section.
4) Check that the noise level of the audio output terminal is below –55.0 dBs.

**9-973-267-11**

**Sony Corporation**
Personal Video Group

**English**
92H0936-1
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**Published by Customer Relations and Service Group**

# CCD-TR31/TR303/TR303PK
## RMT-507

**SONY**
# SERVICE MANUAL

*US Model*
*Canadian Model*
*CCD-TR31*
*E Model*
*CCD-TR303/TR303PK*

# SUPPLEMENT-1

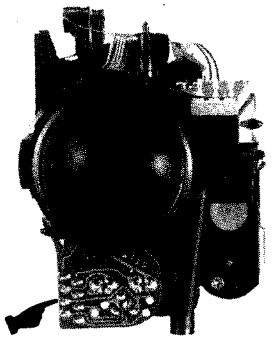
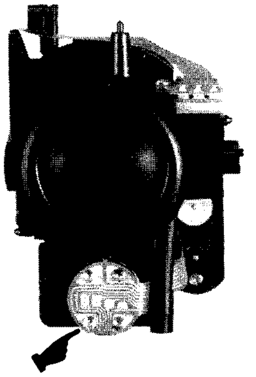
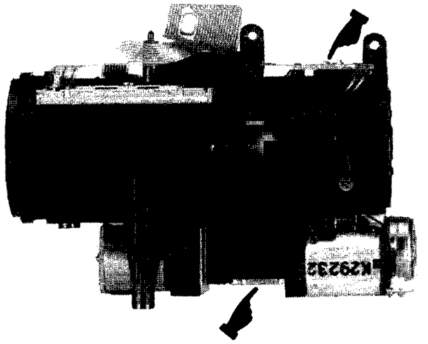
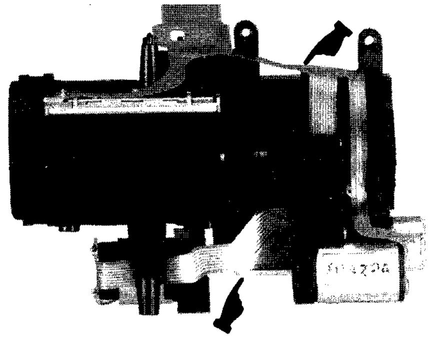
File this supplement with the Service Manual.

**Subject: ZOOM LENS (TYPE B) ASSEMBLY Addition**

- The B type lens (VCL-6210WF) has been added to the present A type lens (VCL-6210WC). Take note that although these lens are interchangeable, their components are not.

Differentiating the lens

☛ : Changed portion

| TYPE A (VCL-6210WC) | TYPE B (VCL-6210WF) |
|---|---|
| From the front of the lens<br> | From the front of the lens<br> |
| From the right side of the lens (as seen from the front)<br><br> | From the right side of the lens (as seen from the front)<br> |

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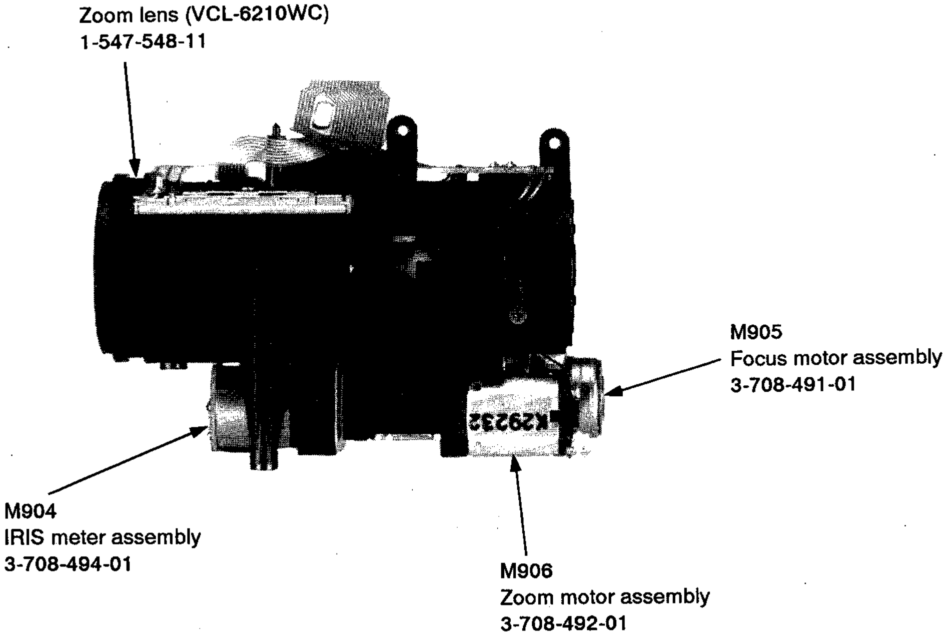
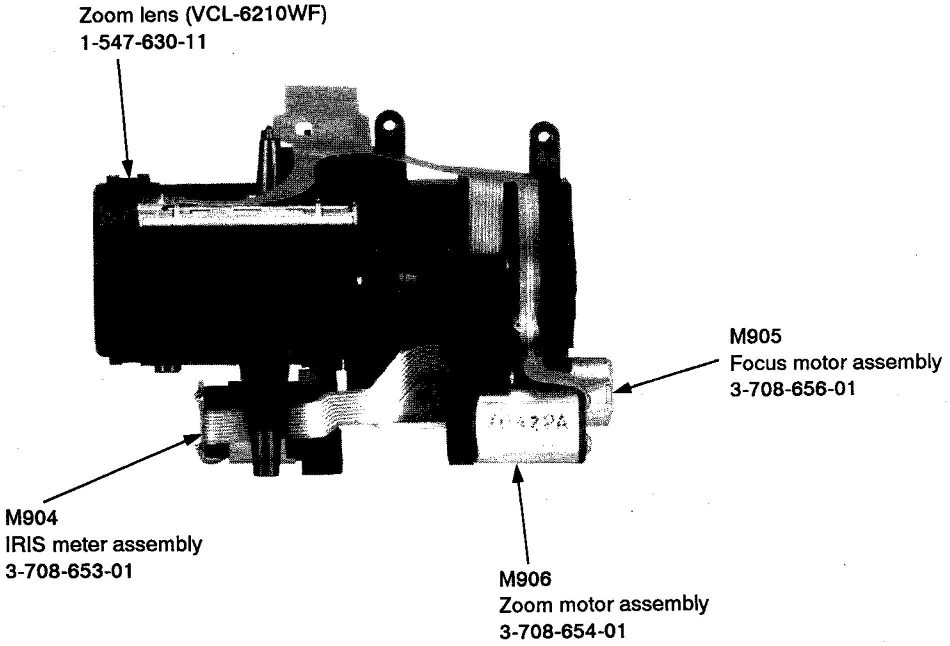
## 2-14. INTERNAL VIEWS

**— Right side —**

**TYPE A**


Zoom lens (VCL-6210WC)
1-547-548-11
M905
Focus motor assembly
3-708-491-01
M904
IRIS meter assembly
3-708-494-01
M906
Zoom motor assembly
3-708-492-01

**TYPE B**


Zoom lens (VCL-6210WF)
1-547-630-11
M905
Focus motor assembly
3-708-656-01
M904
IRIS meter assembly
3-708-653-01
M906
Zoom motor assembly
3-708-654-01

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## 5-3. MAIN BOARDS ASSEMBLY

Page. 176

## MISCELLANEOUS

| FORMER | | | NEW | | |
|---|---|---|---|---|---|
| Ref. No. | Part No. | Description | Ref. No. | Part No. | Description |
| 118 | 1-547-548-11 | LENS, ZOOM (VCL-6210WC) | 118 | 1-547-548-11 | LENS, ZOOM (VCL-6210WC)(TYPE A) |
| | | | 118 | 1-547-630-11 | LENS, ZOOM (VCL-6210WF)(TYPE B) |

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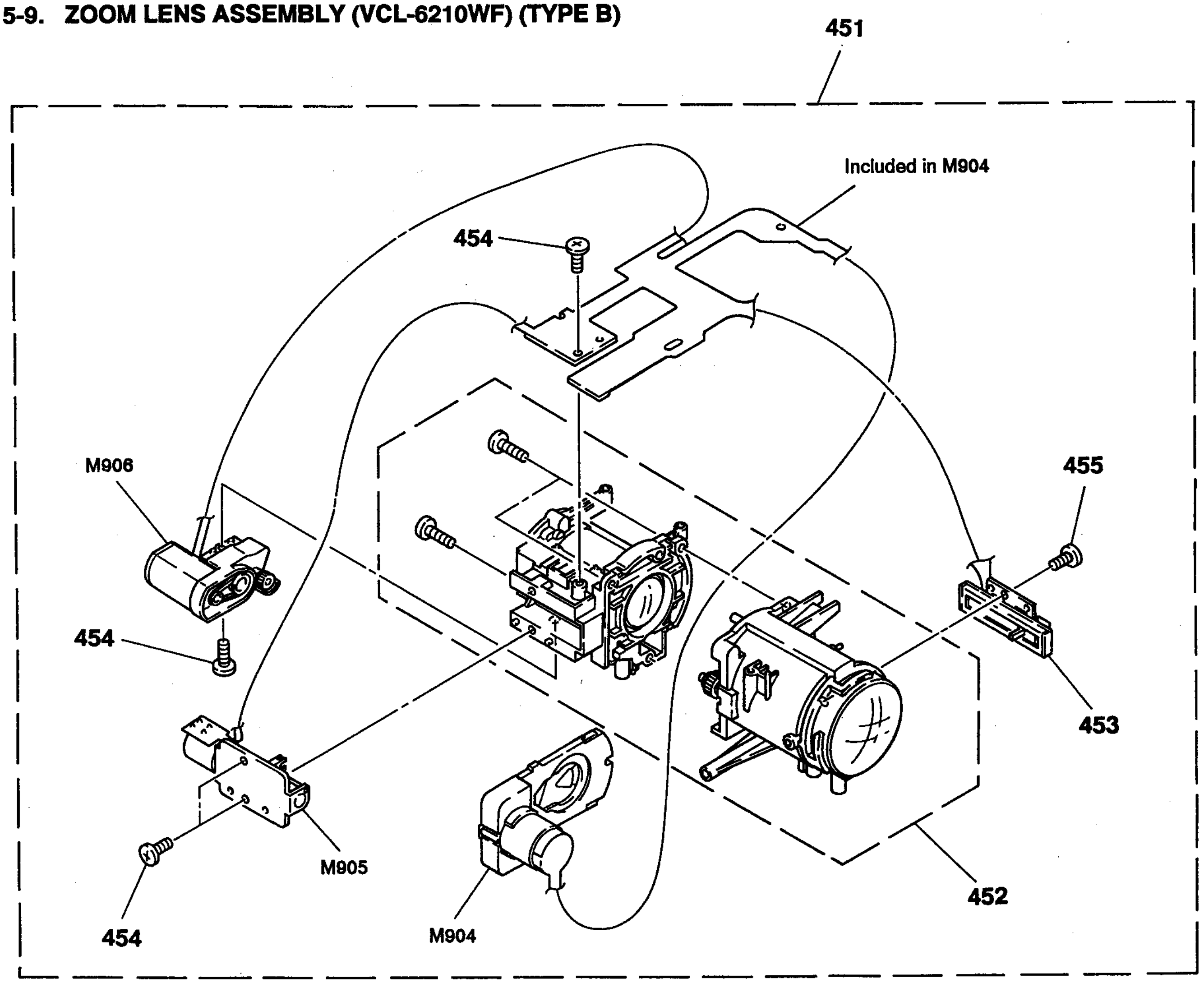
## 5-9. ZOOM LENS ASSEMBLY (VCL-6210WF) (TYPE B)



| Ref. No. | Part No. | Description | Remark | Ref. No. | Part No. | Description | Remark |
|---|---|---|---|---|---|---|---|
| 451 | 1-547-630-11 | LENS, ZOOM (VCL-6210WF)(TYPE B) | | 455 | 3-707-657-01 | SCREW, POTENTIOMETER FITTING | |
| 452 | 3-708-652-01 | LENS ASSY | | M904 | 3-708-653-01 | IRIS UNIT (TYPE B) | |
| 453 | 3-708-655-01 | POTENTIO, ZOOM | | M905 | 3-708-656-01 | MOTOR UNIT, FOCUS (TYPE B) | |
| 454 | 3-708-302-01 | SCREW, FITTING M.E | | M906 | 3-708-654-01 | MOTOR UNIT, ZOOM (TYPE B) | |

## CORRECTION

☛ : Corrected portion

Page. 37

### 3-4. CAMERA MICROPROCESSOR PIN FUNCTION (IC709 ON VC-122 BOARD: CXP80624-417R/424R/434R)

| Pin No. | Signal | I/O | Function |
|---|---|---|---|
| 1 | ZOOM M REV | O | Zoom motor control signal. Normally "H". 15.7 msec period PWM signal when rotating to WIDE.<br>"H" when rotating to TELE. |
| 2 | ZOOM M FWD | O | Zoom motor control signal. Normally "H". 15.7 msec period PWM signal when rotating to TELE.<br>"H" when rotating to WIDE. |

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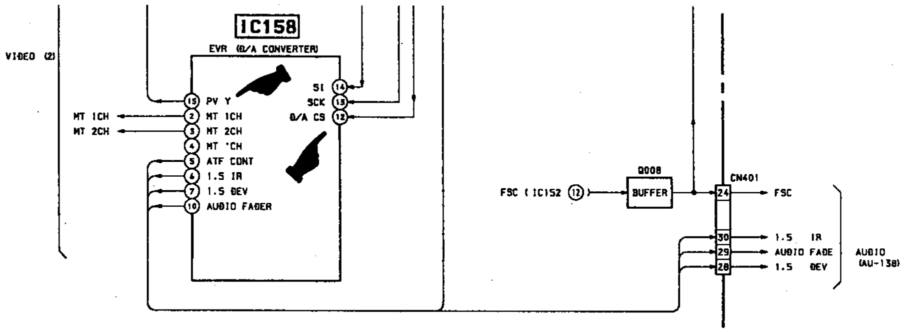
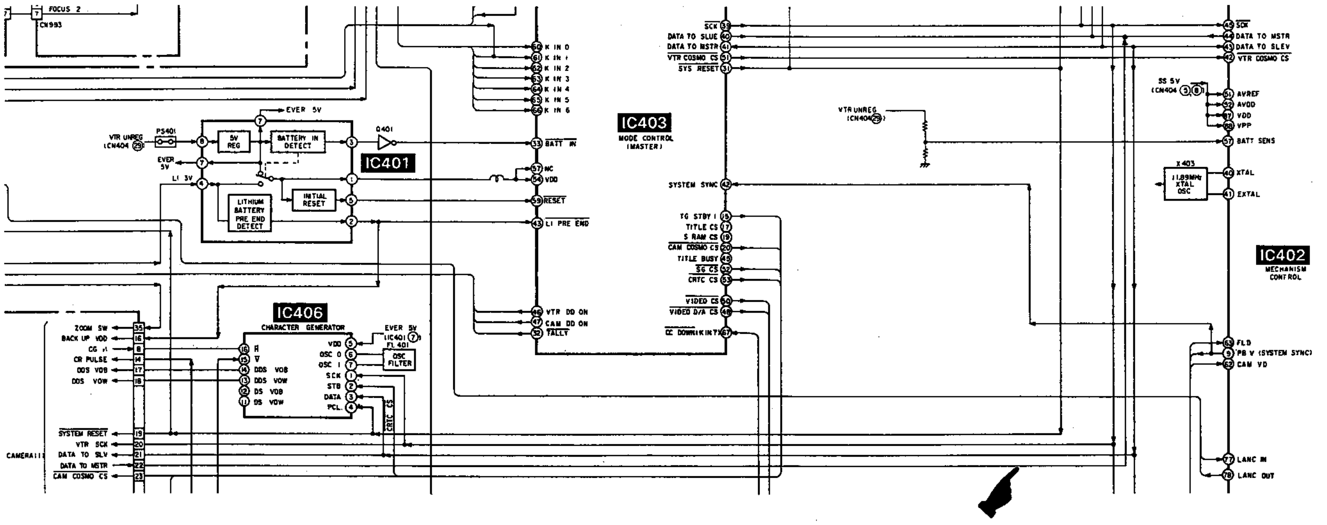
### 3-6. VIDEO (1) BLOCK DIAGRAM


VIDEO (2)
IC158
EVR (D/A CONVERTER)
PV Y
MT 1CH
MT 2CH
MT 1CH
ATF CONT
1.5 IR
1.5 DEV
AUDIO FADER
SI
SCK
D/A CS
Q008
BUFFER
FSC ( IC152 ⑫ )
CN401
FSC
1.5 IR
AUDIO FADE
1.5 DEV
AUDIO (AU-138)

Page. 52, 53

### 3-9. SYSTEM CONTROL BLOCK DIAGRAM


FOCUS 2
CK993
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
EVER 5V
VTR UNREG
PS401
5V REG
BATTERY IN DETECT
LITHIUM BATTERY PRE END DETECT
INITIAL RESET
IC401
Q401
BATT IN
NC
VDD
RESET
LI PRE END
IC403
MODE CONTROL (MASTER)
SCK
DATA TO SLVE
DATA TO MSTR
VTR COSMO CS
SYS RESET
SYSTEM SYNC
TG STBY I
TITLE CS
S RAM CS
CAM COSMO CS
TITLE BUSY
SG CS
CRTC CS
VIDEO CS
VIDEO D/A CS
CC DOWN(KINT)
VTR DD ON
CAM DD ON
TALLY
IC406
CHARACTER GENERATOR
ZOOM SW
BACK UP VDD
CG
CR PULSE
DDS VDB
DDS VDW
SYSTEM RESET
VTR SCK
DATA TO SLV
DATA TO MSTR
CAM COSMO CS
CAMERA
VDD
OSC O
OSC I
SCK
STB
DATA
PCL
OSC FILTER
FL401
CRTC CS
IC402
MECHANISM CONTROL
SCK
DATA TO MSTR
DATA TO SLEV
VTR COSMO CS
AVREF
AVDD
VDD
VPP
BATT SENS
X403
11.89MHz XTAL OSC
XTAL
EXTAL
FLD
PB V (SYSTEM SYNC)
CAM VD
LANC IN
LANC OUT

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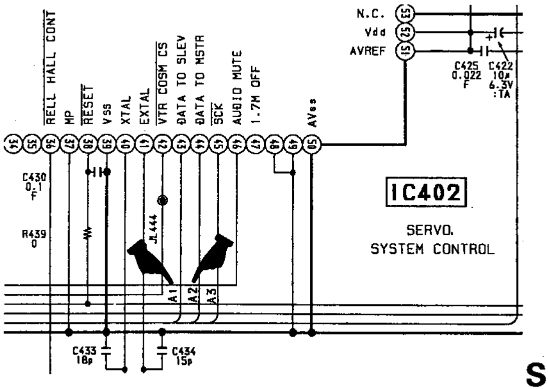
### VS-95 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM


N.C.
Vdd
AVREF
C425 0.022 F
C422 10μ 6.3V :TA
REEL HALL CONT
MP
RESET
VSS
XTAL
EXTAL
VTR COSM CS
DATA TO SLEV
DATA TO MSTR
SCK
AUDIO MUTE
1.7H OFF
AVss
C430 0.1 F
R439 0
IC402
SERVO.
SYSTEM CONTROL
A1
A2
A3
C433 18p
C434 15p

Sony Corporation
Personal Video Group

9-973-267-81

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Published by CV Quality Engineering DIV.

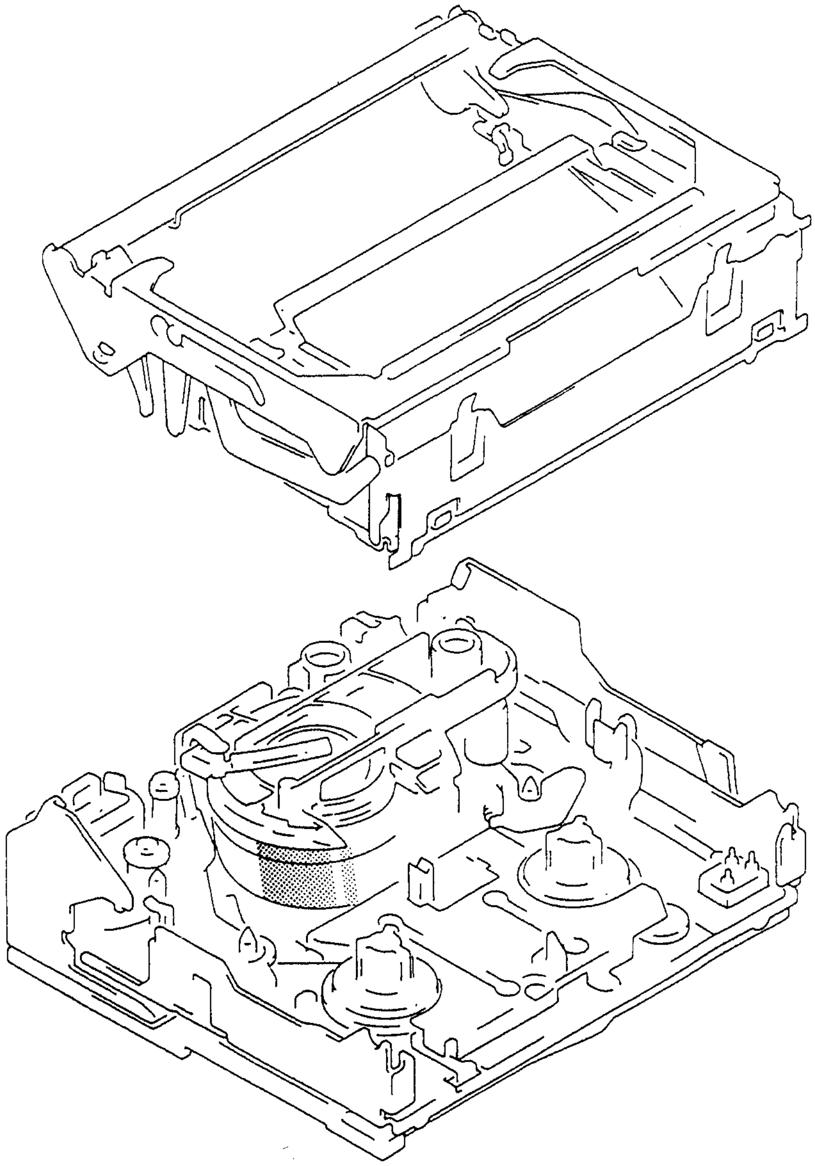
# 8 mm Video MECHANICAL ADJUSTMENT MANUAL IV

V12995

## A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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# 1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the [USE] mode. (To select the [USE] mode, refer to "1-3, Handling of Mode Selector".)

## 1-1. CASSETTE COMPARTMENT ASSEMBLY

### 1. Removal (Fig. 1)

1) Select the [USE] mode.
2) Push the part ⓐ of lock arm ❶ toward the arrow Ⓐ to unlock from lock guide ❷, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws ❸ and remove the LS frame ❹ toward the arrow Ⓑ.
4) With the cassette compartment assembly ❺ pushed in arrow Ⓒ direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow Ⓓ to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively.
In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly ❺ in the opposite direction of arrow Ⓒ until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow Ⓓ to remove the cassette compartment assembly.

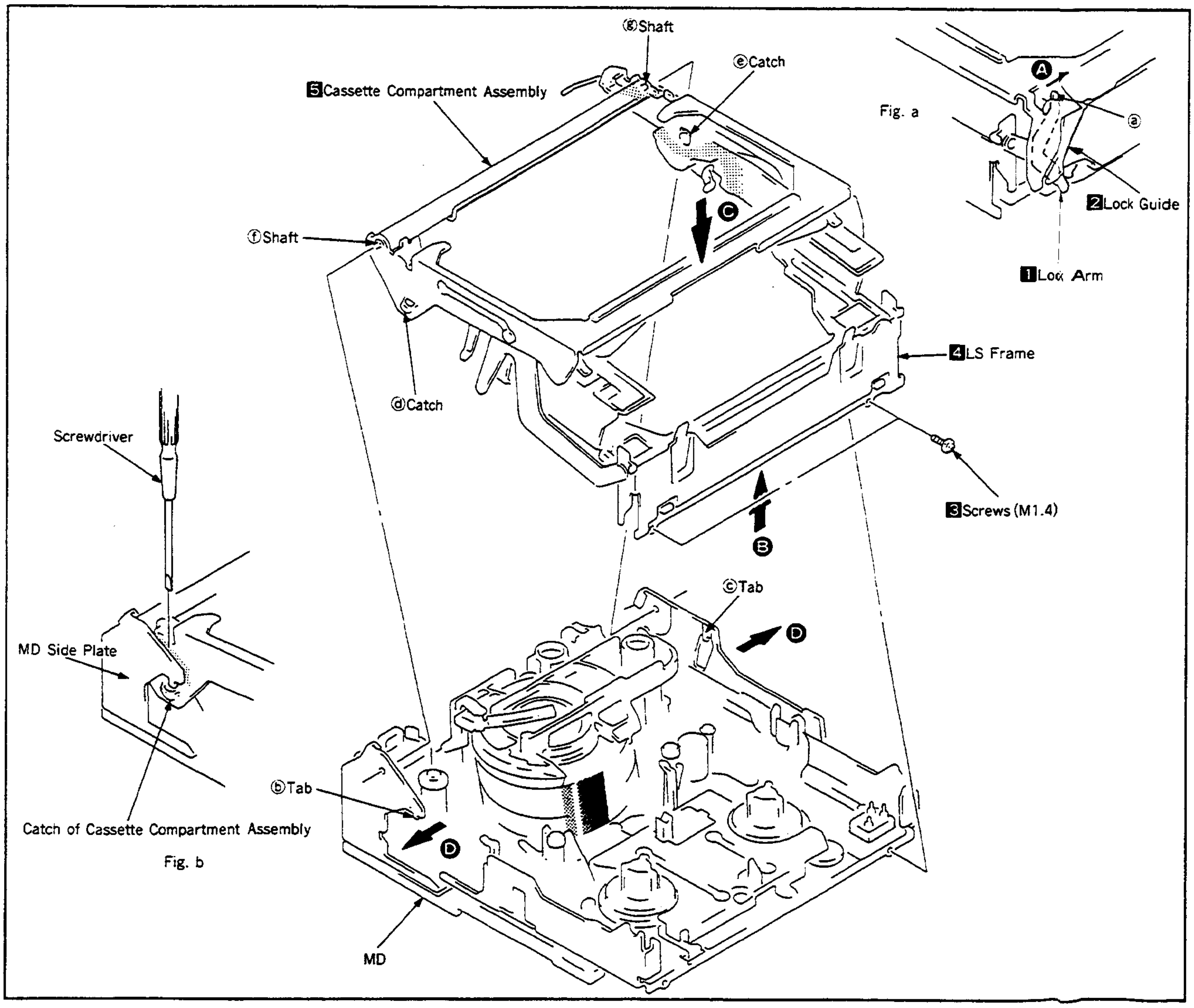

ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
Fig. a
Ⓐ
ⓐ
❷Lock Guide
❶Lock Arm
ⓕShaft
Ⓒ
❹LS Frame
ⓓCatch
Screwdriver
❸Screws (M1.4)
Ⓑ
ⓒTab
Ⓓ
MD Side Plate
ⓑTab
Catch of Cassette Compartment Assembly
Fig. b
Ⓓ
MD

Fig. 1

## 2. Mounting (Fig. 2)

1) Select the [USE] mode.
2) Draw the cassette holder $\boxed{6}$ of cassette compartment assembly $\boxed{5}$ toward the arrow 🅔, and lower the LS frame $\boxed{4}$ toward the arrow 🅕.
3) With the cassette compartment assembly $\boxed{5}$ tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
   At this time, the part ⓙ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓛ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly $\boxed{5}$ so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm $\boxed{1}$ of cassette compartment assembly must be inserted into a groove in the guide rail $\boxed{7}$ on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame $\boxed{4}$ inside the LS chassis $\boxed{8}$.
6) Push down the cassette compartment to lock.

**Note :** Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws $\boxed{3}$.

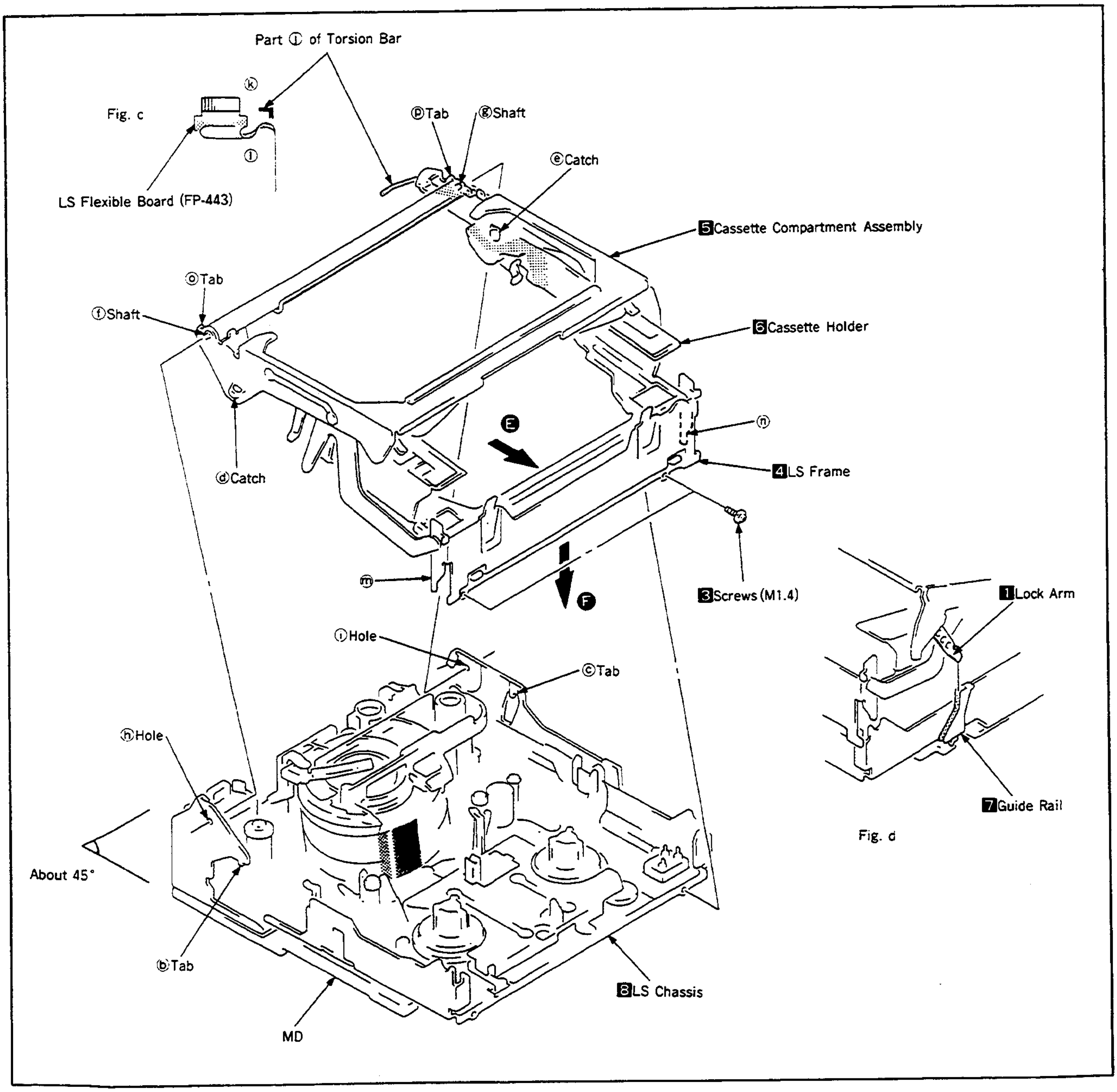

Part ⓙ of Torsion Bar
ⓚ
Fig. c
ⓛ
LS Flexible Board (FP-443)
ⓟTab
ⓖShaft
ⓔCatch
5 Cassette Compartment Assembly
ⓞTab
ⓕShaft
6 Cassette Holder
ⓝ
E
4 LS Frame
ⓓCatch
ⓜ
F
3 Screws (M1.4)
1 Lock Arm
ⓘHole
ⓒTab
ⓗHole
7 Guide Rail
Fig. d
About 45°
ⓑTab
8 LS Chassis
MD

Fig. 2

## 1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap 2 on the Reflector C 1.
3) Press the pin of the push switch 3 (ON state) and fix it with adhesive tape 4 in that state.

**Note** : Press the asterisked ( ∗ ) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch 5 in an arrow direction as shown in Fig. a.

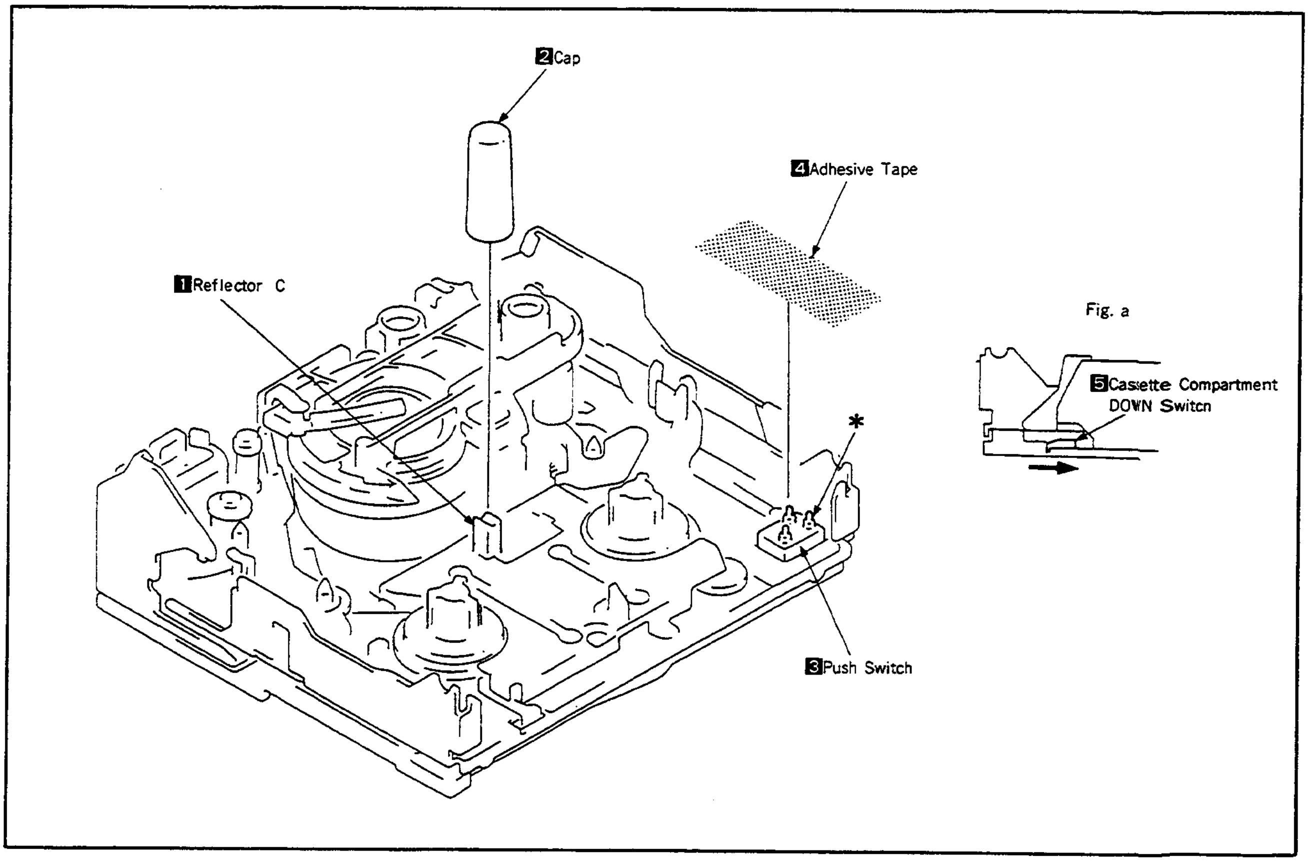

2 Cap
4 Adhesive Tape
1 Reflector C
∗
3 Push Switch
Fig. a
5 Cassette Compartment DOWN Switch

Fig. 3

## 1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
  U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

1 Construction (Fig.5)

2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector ❶ and M-SW connector ❷ into the mode selector IV conversion connector ❸ respectively.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

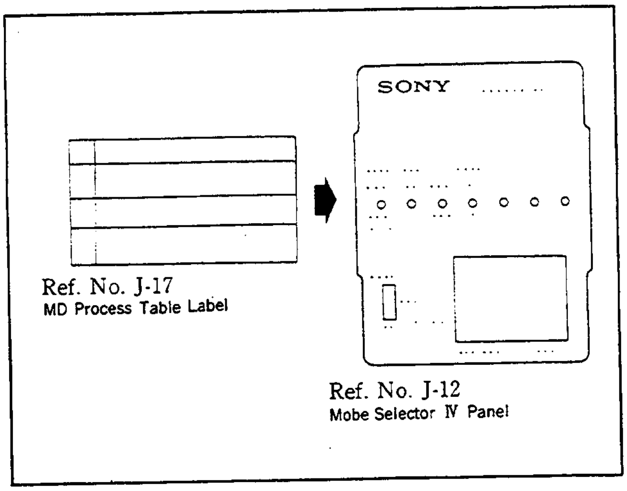

SONY
Ref. No. J-17
MD Process Table Label
Ref. No. J-12
Mobe Selector Ⅳ Panel

Fig. 4

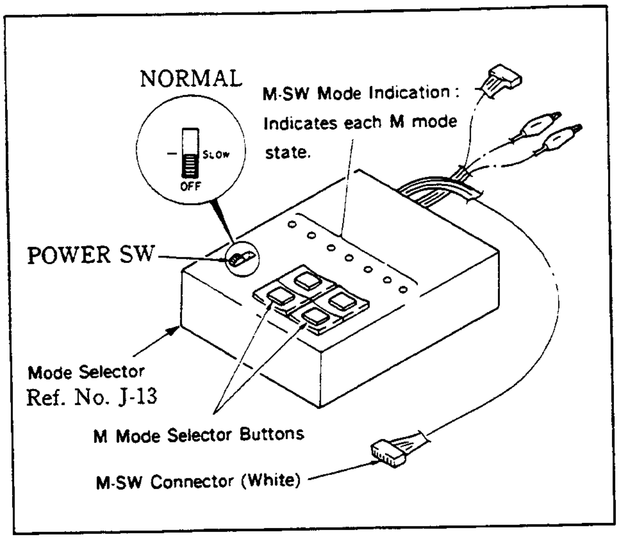

NORMAL
SLOW
OFF
M-SW Mode Indication : Indicates each M mode state.
POWER SW
Mode Selector
Ref. No. J-13
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

For CCD-FX410 series

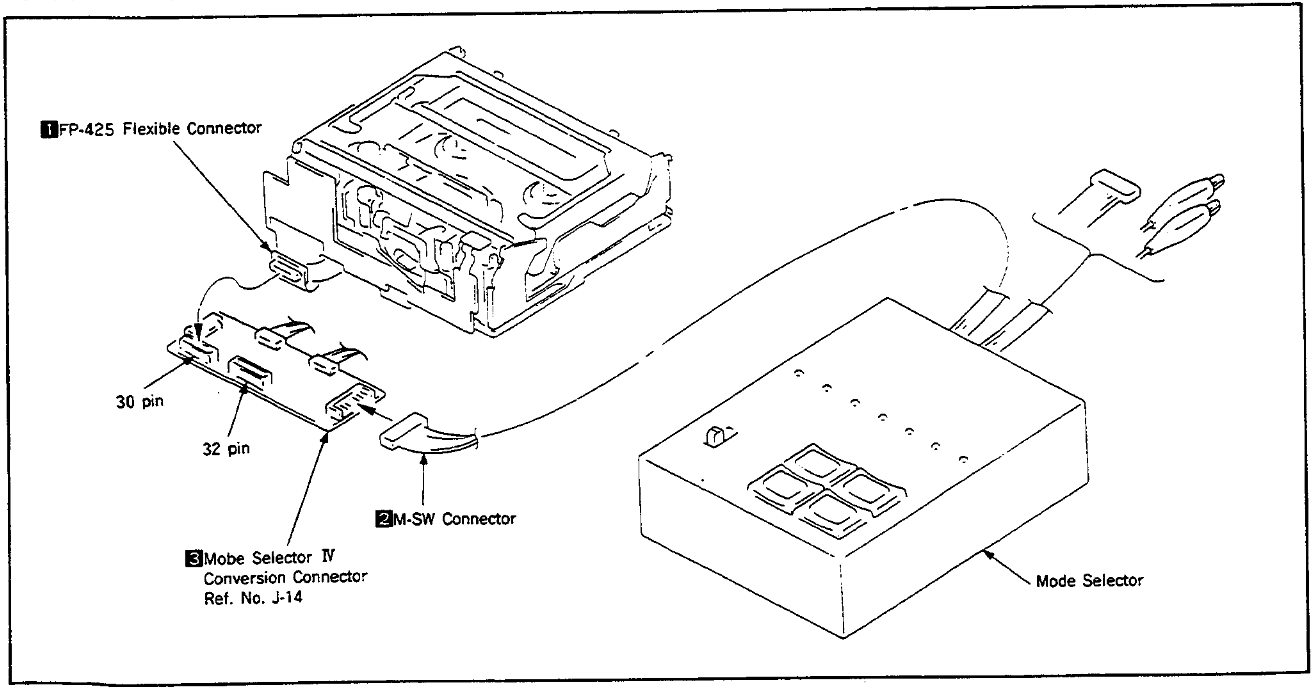
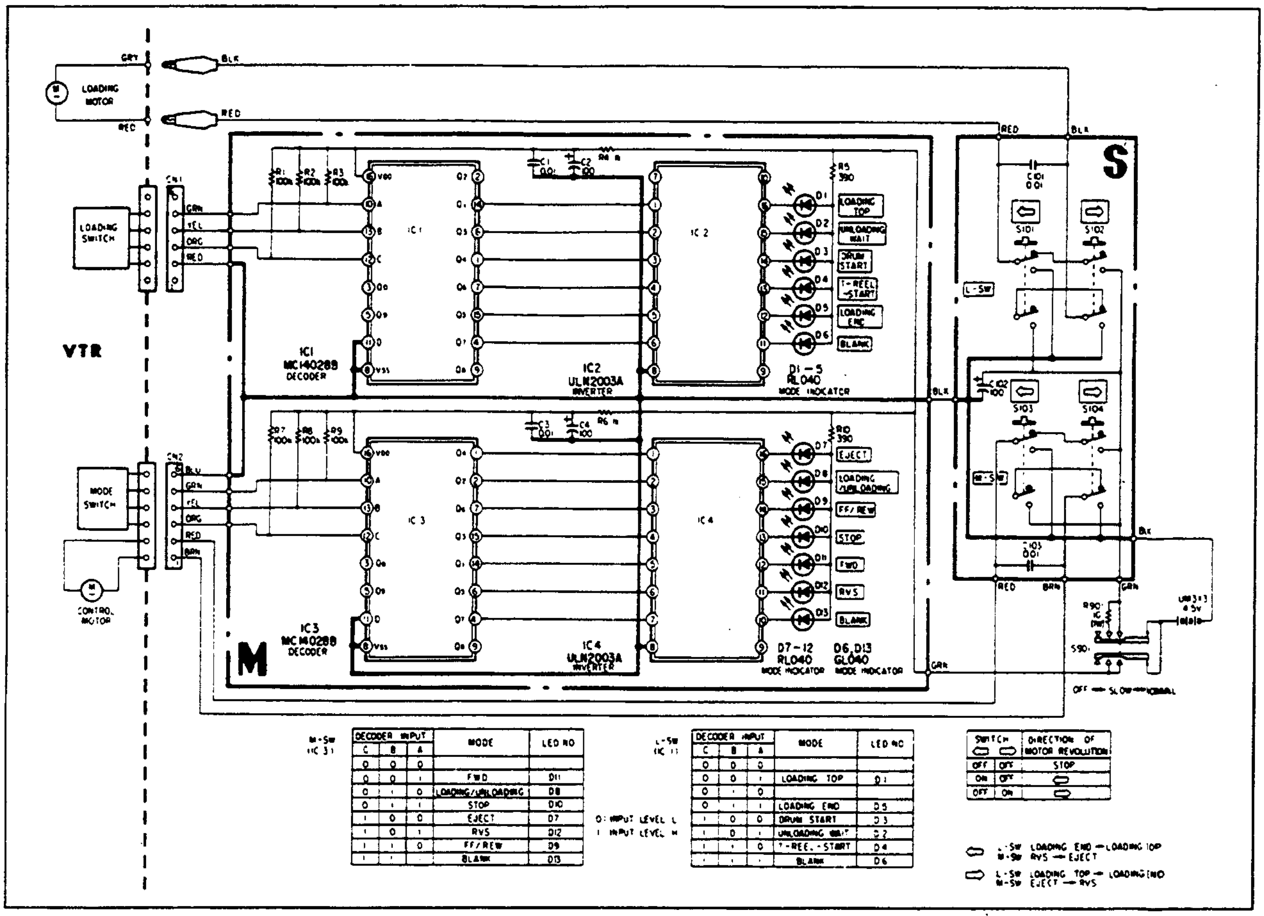

❶FP-425 Flexible Connector
30 pin
32 pin
❷M-SW Connector
❸Mobe Selector Ⅳ Conversion Connector Ref. No. J-14
Mode Selector

Fig. 6

## 1-4. MODE SELECTOR SCHEMATIC DIAGRAM


GRY
BLK
RED
LOADING MOTOR
LOADING SWITCH
CN1
GRN
YEL
ORG
VTR
MODE SWITCH
CN2
BLU
BRN
CONTROL MOTOR
IC1
MC14028B
DECODER
IC2
ULN2003A
INVERTER
IC3
MC14028B
DECODER
IC4
ULN2003A
INVERTER
D1–5
RL040
MODE INDICATOR
D7–12
RL040
MODE INDICATOR
D6, D13
GL040
MODE INDICATOR
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL START
LOADING END
BLANK
EJECT
LOADING/UNLOADING
FF/REW
STOP
FWD
RVS
BLANK
S
M
S101
S102
S103
S104
L-SW
M-SW
C101 0.01
C102 100
C103 0.01
R901
S901
OFF ← SLOW ← NORMAL

M-SW (IC 3)

| DECODER INPUT | | | MODE | LED NO |
|---|---|---|---|---|
| C | B | A | | |
| 0 | 0 | 0 | | |
| 0 | 0 | 1 | FWD | D11 |
| 0 | 1 | 0 | LOADING/UNLOADING | D8 |
| 0 | 1 | 1 | STOP | D10 |
| 1 | 0 | 0 | EJECT | D7 |
| 1 | 0 | 1 | RVS | D12 |
| 1 | 1 | 0 | FF/REW | D9 |
| 1 | 1 | 1 | BLANK | D13 |

0 : INPUT LEVEL L
1 INPUT LEVEL H

L-SW (IC 1)

| DECODER INPUT | | | MODE | LED NO |
|---|---|---|---|---|
| C | B | A | | |
| 0 | 0 | 0 | | |
| 0 | 0 | 1 | LOADING TOP | D1 |
| 0 | 1 | 0 | | |
| 0 | 1 | 1 | LOADING END | D5 |
| 1 | 0 | 0 | DRUM START | D3 |
| 1 | 0 | 1 | UNLOADING WAIT | D2 |
| 1 | 1 | 0 | T-REEL-START | D4 |
| 1 | 1 | 1 | BLANK | D6 |

| SWITCH | | DIRECTION OF MOTOR REVOLUTION |
|---|---|---|
| ⇦ | ⇨ | |
| OFF | OFF | STOP |
| ON | OFF | ⇦ |
| OFF | ON | ⇨ |

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

## 1-5. MODE SELECTOR PARTS LIST

| Ref. No | Part No. | Description | | |
|---|---|---|---|---|
| | | **CAPACITOR** | | |
| C1 | 1-108-579-00 | MILER | 0.01μF | 50V |
| C2 | 1-123-333-00 | ELECT | 100μF | 24V |
| C3 | 1-108-579-00 | MILER | 0.01μF | 50V |
| C4 | 1-123-333-00 | ELECT | 100μF | 24V |
| C101 | 1-108-579-00 | MILER | 0.01μF | 50V |
| C102 | 1-123-333-00 | ELECT | 100μF | 24V |
| C103 | 1-108-579-00 | MILER | 0.01μF | 50V |
| | | **DIODE** | | |
| D1 | 8-719-812-31 | DIODE TLR123 | | |
| D2 | 8-719-812-31 | DIODE TLR123 | | |
| D3 | 8-719-812-31 | DIODE TLR123 | | |
| D4 | 8-719-812-31 | DIODE TLR123 | | |
| D5 | 8-719-812-31 | DIODE TLR123 | | |
| D6 | 8-719-812-33 | DIODE TLG123A | | |
| D7 | 8-719-812-31 | DIODE TLR123 | | |
| D8 | 8-719-812-31 | DIODE TLR123 | | |
| D9 | 8-719-812-31 | DIODE TLR123 | | |
| D10 | 8-719-812-31 | DIODE TLR123 | | |
| D11 | 8-719-812-31 | DIODE TLR123 | | |
| D12 | 8-719-812-31 | DIODE TLR123 | | |
| D13 | 8-719-812-33 | DIODE TLG123A | | |

| Ref. No | Part No. | Description | | |
|---|---|---|---|---|
| | | **IC** | | |
| IC1 | 8-752-240-28 | IC TC4028BP | | |
| IC2 | 8-752-120-03 | IC μPA2003C | | |
| IC3 | 8-759-240-28 | IC TC4028BP | | |
| IC4 | 8-759-120-03 | IC μPA2003C | | |
| | | **RESISTOR** | | |
| R1 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R2 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R3 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R4 | 1-247-131-00 | CARBON | 1K | 1/4W |
| R5 | 1-247-121-00 | CARBON | 390 | 1/4W |
| R6 | 1-247-131-00 | CARBON | 1K | 1/4W |
| R7 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R8 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R9 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R10 | 1-247-121-00 | CARBON | 390 | 1/4W |
| R901 | 1-214-594-00 | METAL | 10 | 1W |

## 2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

### 2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

**Note** : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

### 2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the USE mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

**Note** : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

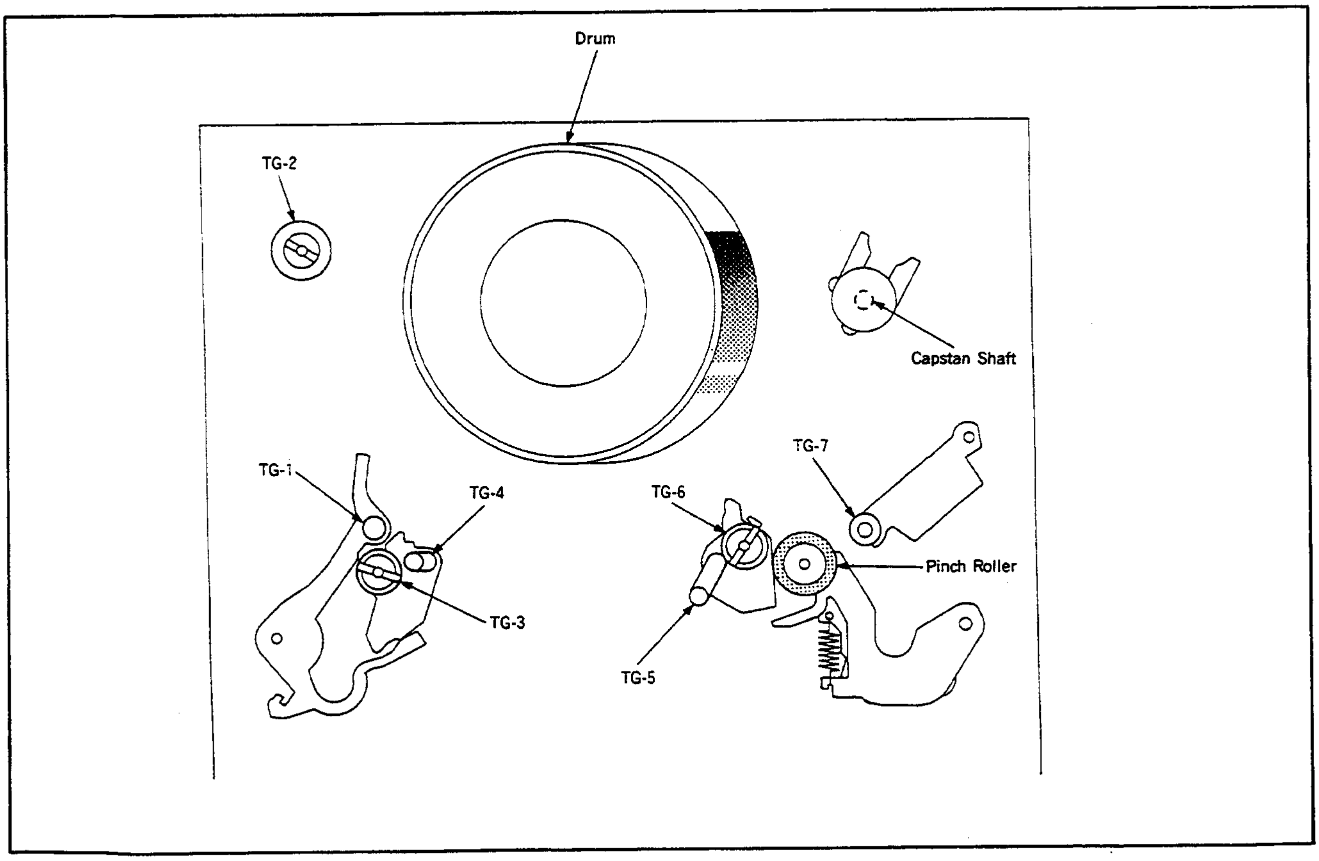


Fig. 7

## 2-3. PERILDIC CHECK ITEMS

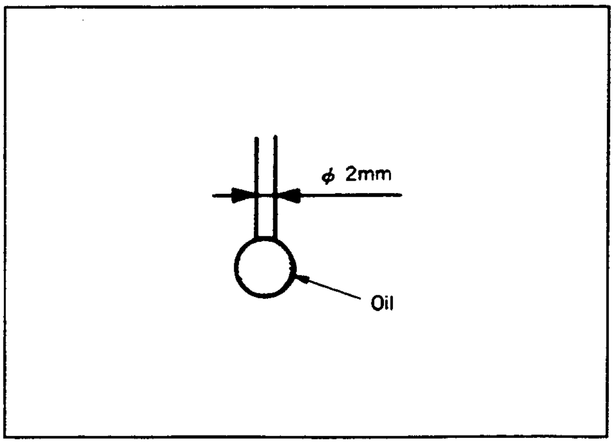
| | Location of Maintenance and check | Hours of Use (H) | | | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | |
| Tape trans-portion System | Cleaning of tape path surface | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Be careful of oil |
| | Cleaning and degaussing of rotary assembly | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Be careful of oil |
| Driving System | Relay belt | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | 3-944-539-01 |
| | Capstan shaft | — | ◎ | — | ◎ | — | ◎ | — | ◎ | — | ◎ | Be adsolutely careful not to get oil on the tape path surface. |
| | Relay pulley shaft | — | ◎ | — | ◎ | — | ◎ | — | ◎ | — | ◎ | |
| | Loading motor | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | A-7040-304-A |
| Performance Confirmation | Abnormal noise | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | |
| | Back tension measurement | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |
| | Brake system | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |
| | FWD. RVS torque measurement | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |

○ : Cleaning ◎ : Oil ☆ : Confirmation

**Note :** When overhauling, refer to the items above to replace parts.

**Note :** Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

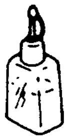


## 2-4. Service jigs list

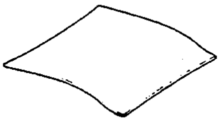
| Ref. No. | Name | Part No. | Fixture No. | Usage and Others |
|---|---|---|---|---|
| J-1 | Cleaning fluid | Y-2031-001-0 | | |
| J-2 | Chamois cloth | 2-034-697-00 | | |
| J-3 | Super fine applicator<br>(Made by NIPPON APPLICATOR, P752D) | | | |
| J-4 | Head degausser | Widely available | | |
| J-5 | Small mirror for adjustment<br>Spare mirror | J-6080-029-A<br>J-6080-030-1 | SL-5052 | Tape path |
| J-6 | Alignment tape NTSC (WR5-1N)<br>PAL (WR5-1C) | 8-967-995-01<br>8-967-995-06 | | Tape path |
| J-9 | FWD and RVS winding torque cassette | J-6080-824-A | GD-2086 | |
| J-10 | Rotary drum jig | (Attached to the maintenance rotary upper drum) | | |
| J-11 | Screwdriver for tape path | J-6082-026-A | | For tape guide adjustment |
| J-12 | Mode selector Ⅳ panel | J-6082-105-A | | |
| J-13 | Mode selector | J-6080-825-A | | For all models |
| J-14 | Mode selector Ⅳ conversion connector | J-6082-167-A | | |
| J-15 | FWD B.T. adjusting driver | J-6082-182-A | | |
| J-16 | Adjusting remote controller | J-6082-053-B | | Tape path (Setting of PATH mode) |
| J-17 | MD process table label | J-6082-166-A | | |

Other equipment
- Oscilloscope
- Analog tester (20 kΩ)

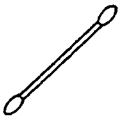
J-1



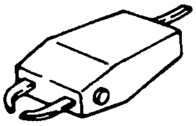
J-2



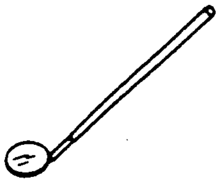
J-3



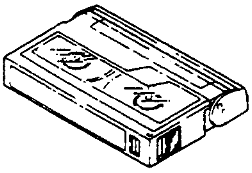
J-4



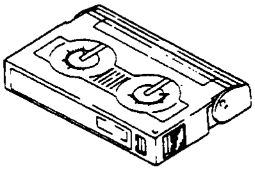
J-5



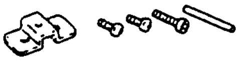
J-6



J-9

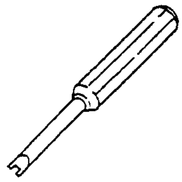


J-10

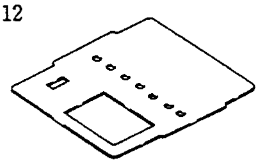


(Attached to the maintenance rotary upper drum)

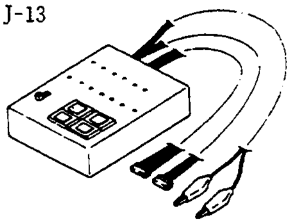
J-11



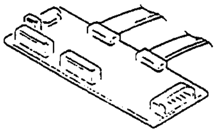
J-12



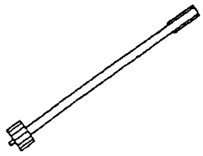
J-13



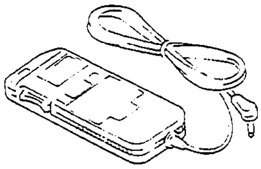
J-14



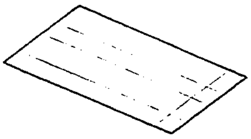
J-15



J-16



J-17



# 3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

**Note** : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

**Note** : The modes in ☐ are those set by pressing the mode selector buttons.

## 3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw ❶.
3) Remove the Retainer, Gooseneck assembly ❷.

2. Mounting

1) Mount the Retainer, Gooseneck assembly ❷ with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

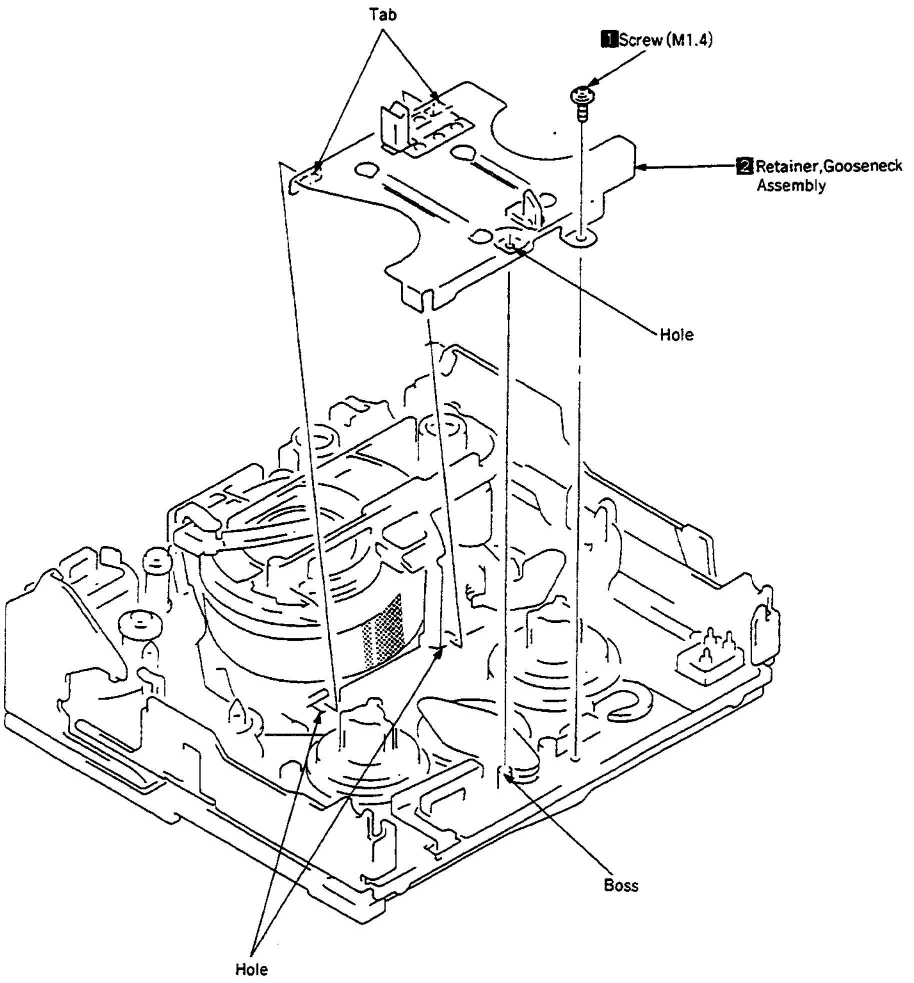


Fig. 8

## 3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws ❶, then the protector base assembly ❷.

### 2. Mounting

1) Mount the protector base assembly ❷ with its three hole engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder ❸.
2) Tighten two screws ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

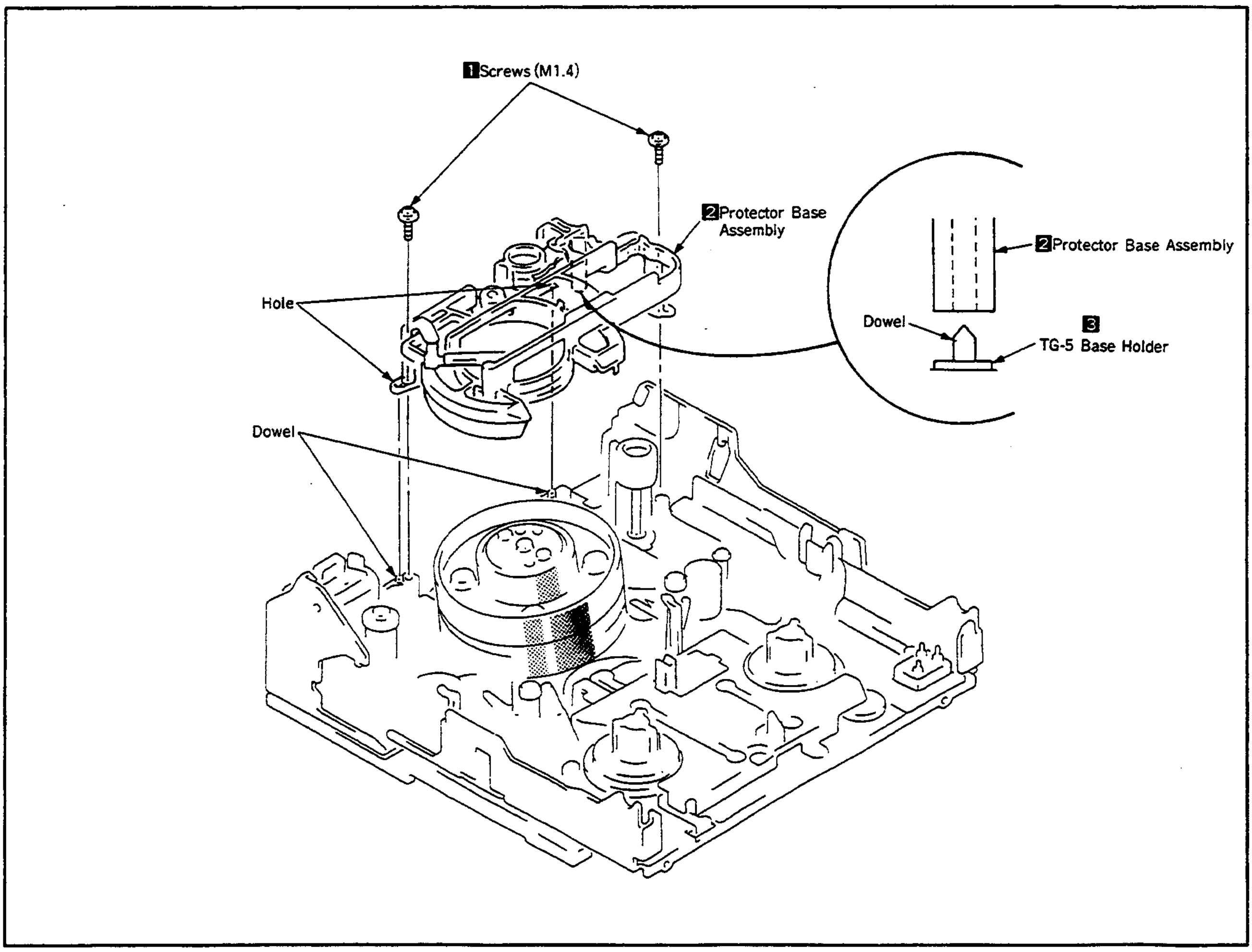

❶Screws (M1.4)
❷Protector Base Assembly
Hole
Dowel
❷Protector Base Assembly
Dowel
❸
TG-5 Base Holder

Fig. 9

## 3-3. DRUM ASSEMBLY (Fig. 10)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board ❶ on the back of MD.
4) Remove three screw ❷, then the drum assembly ❸.

**Note :** Do not touch the outer surfaced of drum (hold portions 🅐 and 🅑 of drum).

### 2. Mounting

1) Mount the drum assembly ❸ while aligning with two dowels ⓐ of chassis.

**Note :** Do not touch the outer surfaced of drum (hold portions 🅐 and 🅑 of drum).

2) Tighten three screw assemblies ❷ in the order of 1, 2 and 3.

**Note :** Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

**Note :** In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board ❶ on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

**Note :** After mounting, make tape path adjustment in Section 4.

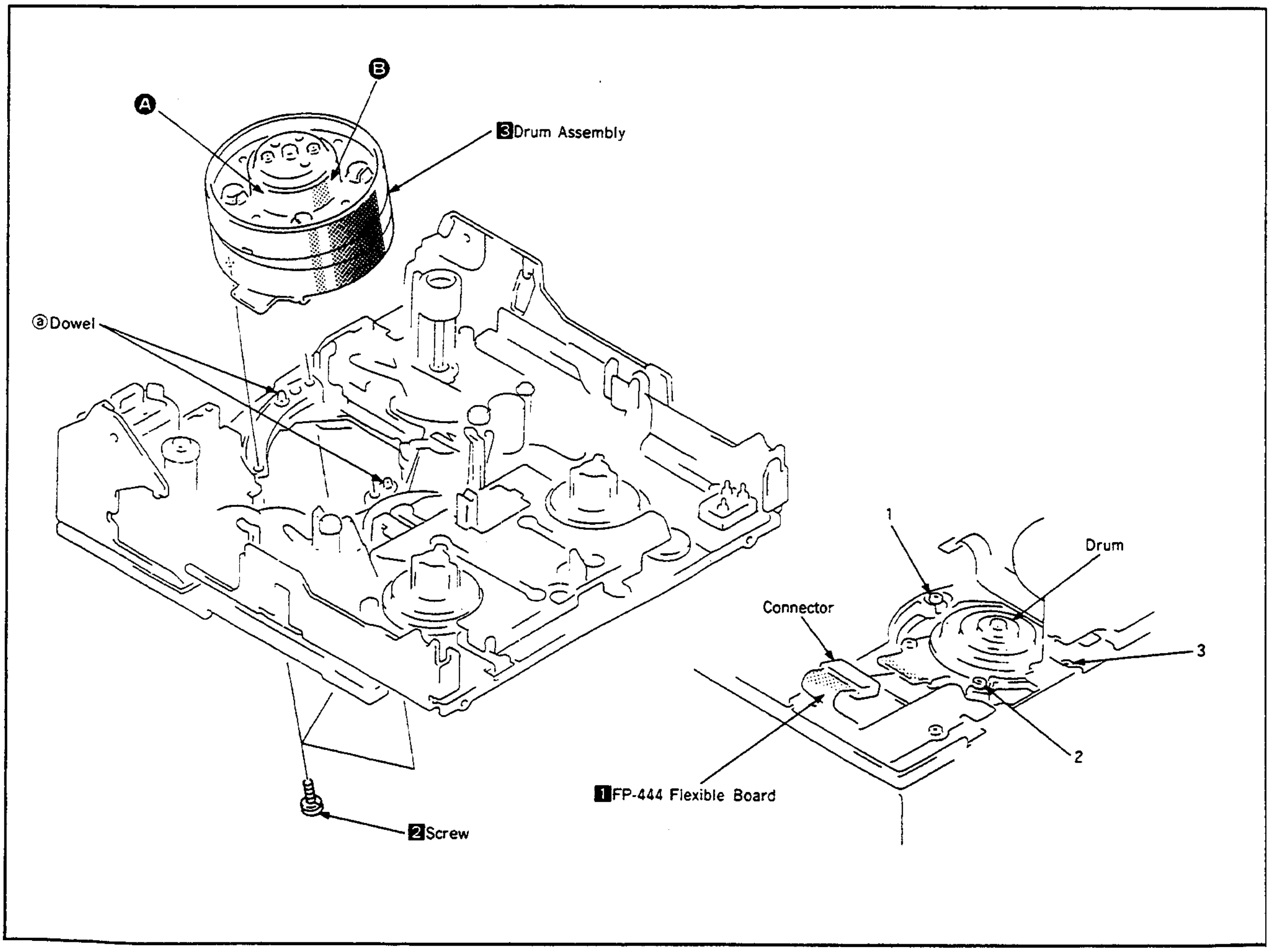


Fig. 10

## 3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw 1, then the capstan cover 2.
3) Remove the screw 3, then the capstan motor assembly 4.

### 2. Mounting

1) Mount the capstan motor assembly 4 and tighten the scre 3.

**Note :** In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover 2 and tighten two screws 1.
3) Referring to 1-1, mount the cassette compartment assembly.

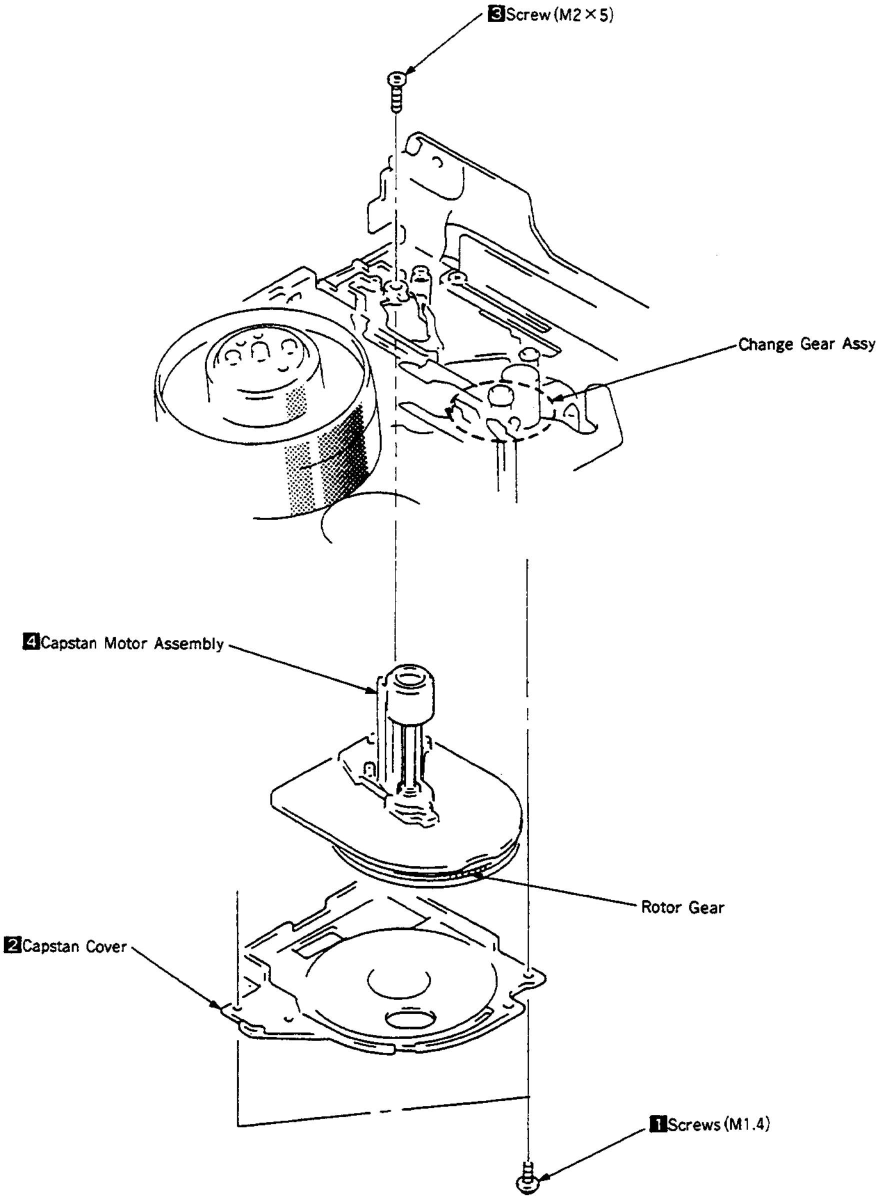

3Screw (M2 × 5)
Change Gear Assy
4Capstan Motor Assembly
Rotor Gear
2Capstan Cover
1Screws (M1.4)

Fig. 11

## 3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly 1.
4) Remove the T soft assembly 2, then the T soft arm 3.

### 2. Mounting

1) Mount the T soft arm 3 with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly 2 with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly 1 and rotate it toward the arrow Ⓐ to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

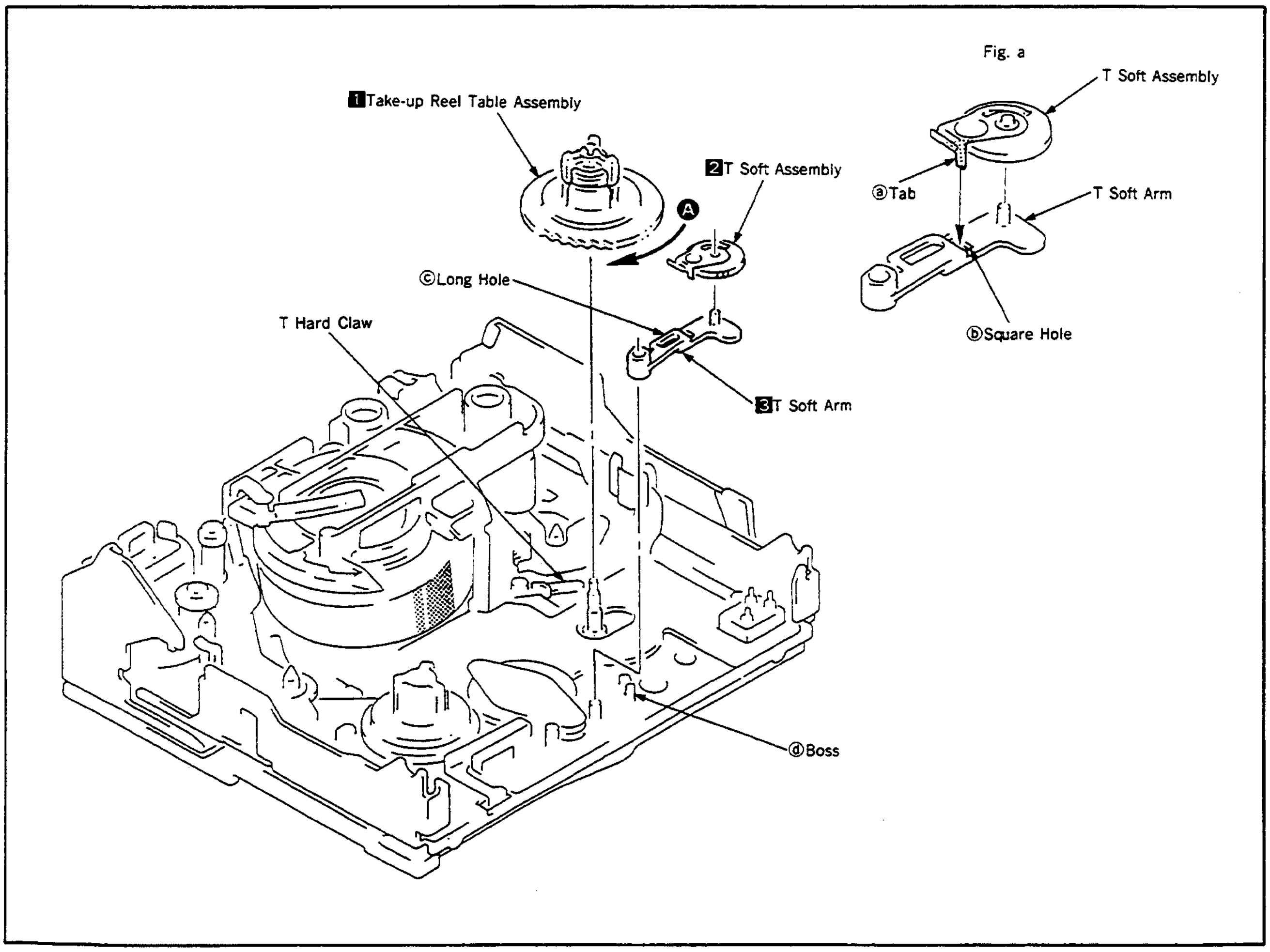


Fig. a
T Soft Assembly
ⓐTab
T Soft Arm
ⓑSquare Hole
1Take-up Reel Table Assembly
2T Soft Assembly
Ⓐ
ⓒLong Hole
T Hard Claw
3T Soft Arm
ⓓBoss

Fig. 12

## 3-6. PINCH ARM ASSEMBLY (Fig. 13)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the $\boxed{\text{READY}}$ mode.
3) Remove a washer ❶, then the pinch arm assembly ❷.

### 2. Mounting

1) Select the $\boxed{\text{READY}}$ mode.
2) Hooking a spring of pinch arm assembly ❷ to the casse positioning boss on the chassis, mount the pinch arm asser bly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer ❶.
5) Referring to 1-1, mount the cassette compartment assembly.

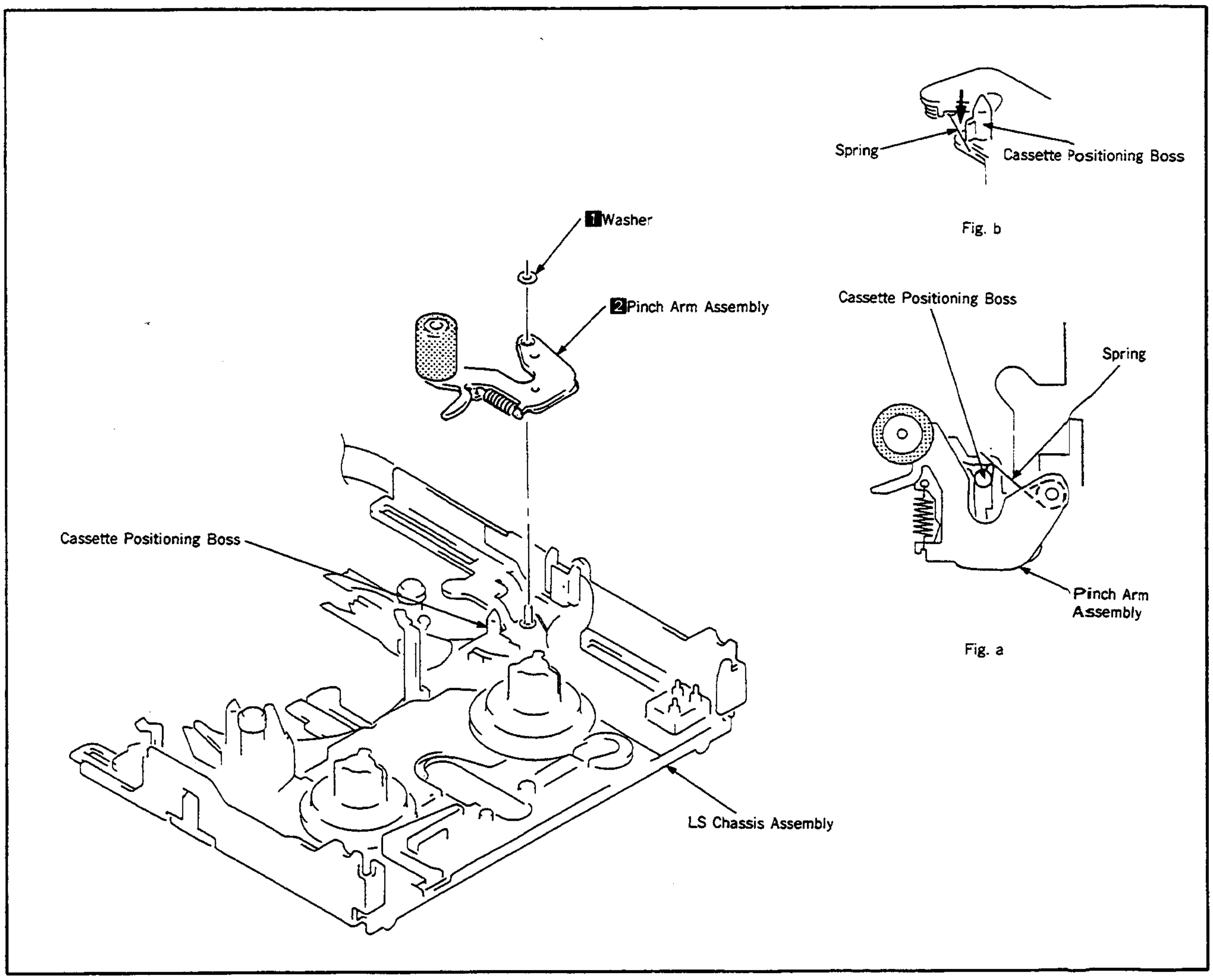

Spring
Cassette Positioning Boss
❶Washer
❷Pinch Arm Assembly
Cassette Positioning Boss
Spring
Cassette Positioning Boss
Pinch Arm Assembly
LS Chassis Assembly

Fig. b

Fig. a

Fig. 13

## LS CHASSIS ASSEMBLY (Fig. 14)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw ❶, TG-5 base holder ❷, and LS flexible board ❸.
5) Remove a lock washer ❹, then the gooseneck as sembly ❺.
6) Remove four screws ❻, then the LS chassis assembly ❼.

### 2. Mounting

1) Select the USE mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly ❼ on the chassis.

**Note** : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws ❻.
6) Mount the LS flexible board ❸ and TG-5 base holder ❷,then tighten the screw ❶.
7) Mount the Gooseneck assembly ❺ and fix it with a washer ❹.

**Note** : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.

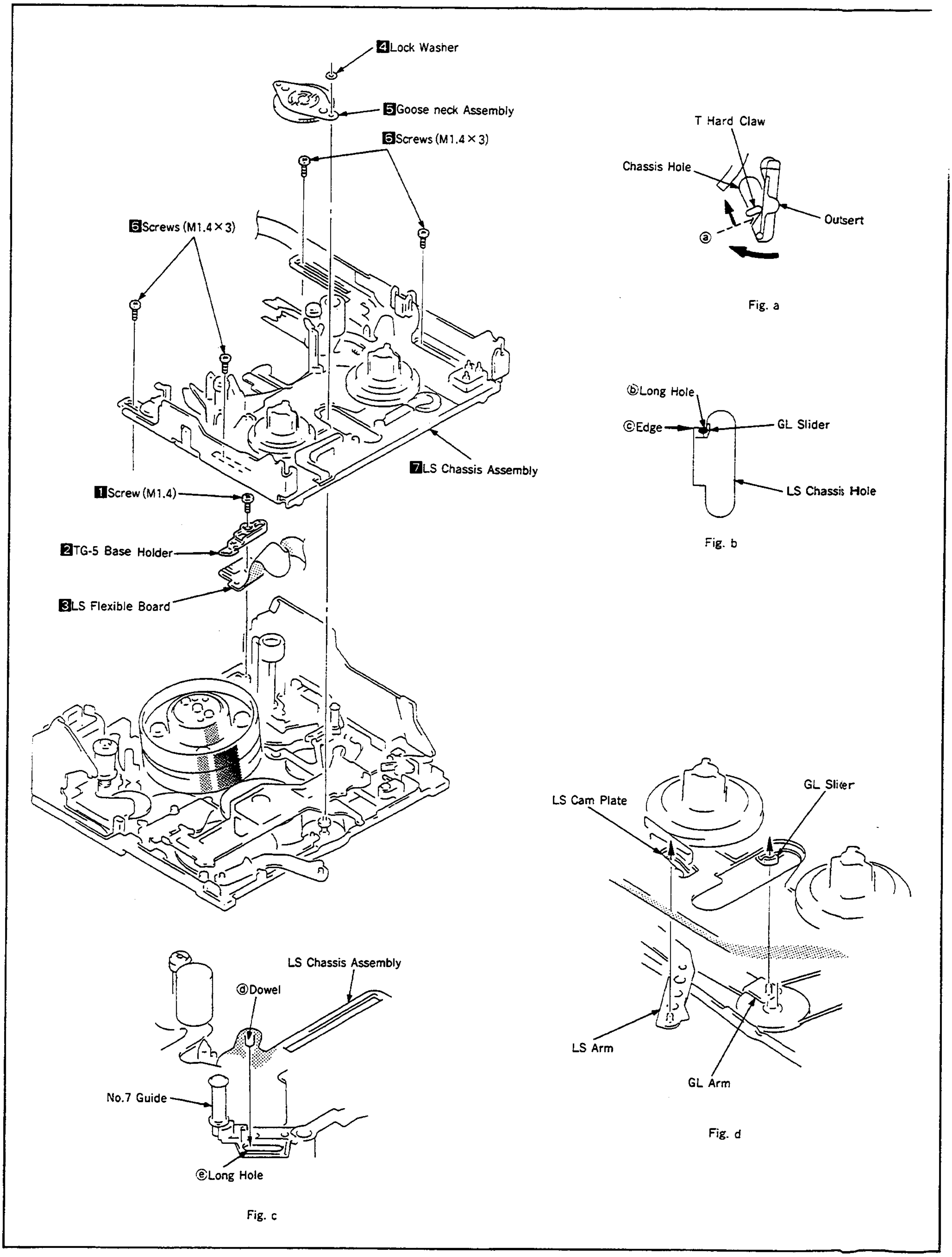

❹Lock Washer
❺Goose neck Assembly
❻Screws (M1.4×3)
❻Screws (M1.4×3)
❼LS Chassis Assembly
❶Screw (M1.4)
❷TG-5 Base Holder
❸LS Flexible Board
T Hard Claw
Chassis Hole
Outsert
ⓐ
ⓑLong Hole
ⓒEdge
GL Slider
LS Chassis Hole
LS Chassis Assembly
ⓓDowel
No.7 Guide
ⓔLong Hole
LS Cam Plate
GL Slider
LS Arm
GL Arm

Fig. a

Fig. b

Fig. c

Fig. d

Fig. 14

## 3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider ❶ toward the arrow Ⓐ, and remove the guide base T assembly ❷ and guide base S assembly ❸ from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly ❷ and guide base S assembly ❸ respectively, align the shaft to hole to remove as shown in Fig. a.

### 2. Mounting

1) Turning the guide base T assembly ❷ and guide base S assembly ❸ respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly ❹, guide arm S assembly ❺ and GL slider ❶ from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly ❷ and guide base S assembly ❸ with the respective guide rails, push in the GL slider ❶ toward the arrow Ⓑ as shown in Fig. 16.

**Note :** Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

**Note :** At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

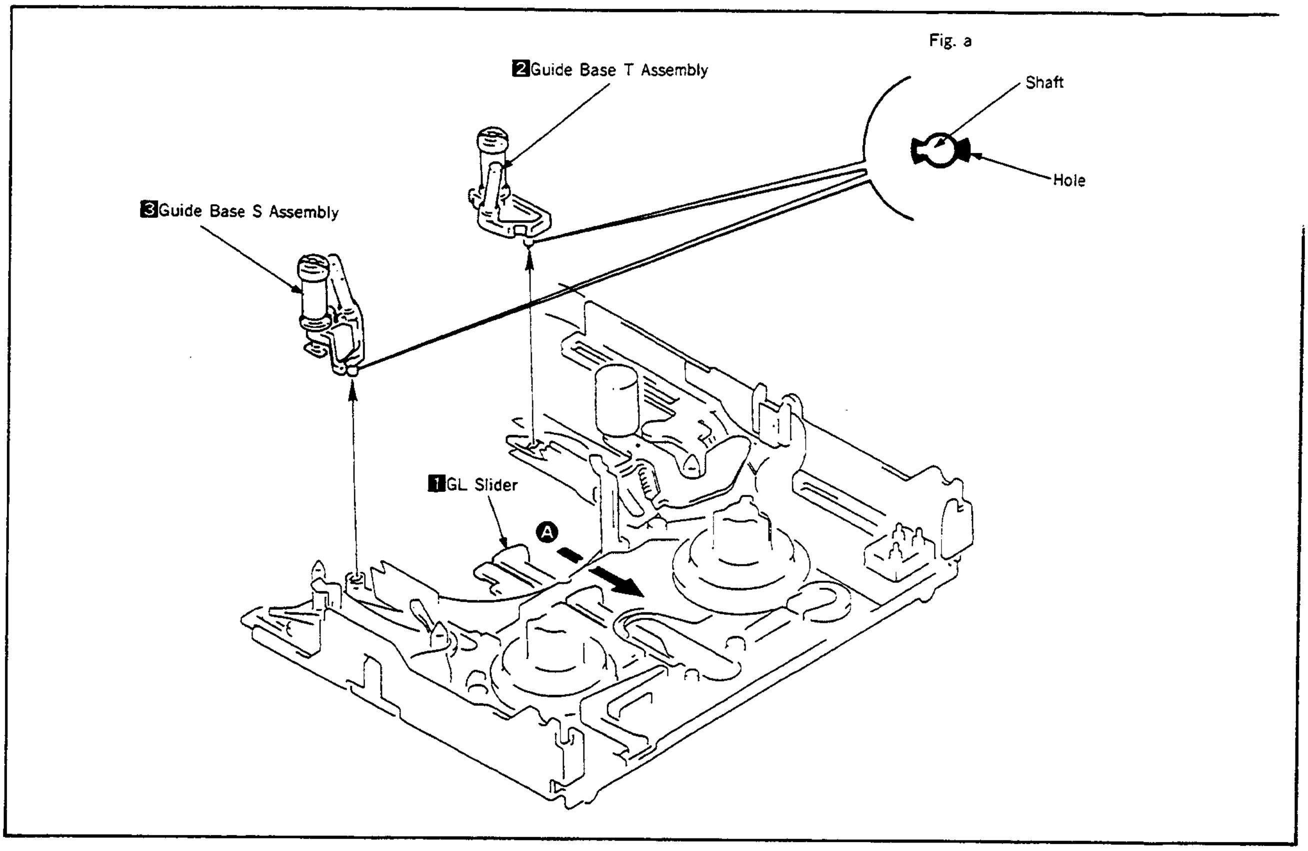


Fig. a
2 Guide Base T Assembly
Shaft
Hole
3 Guide Base S Assembly
1 GL Slider
A

Fig. 15

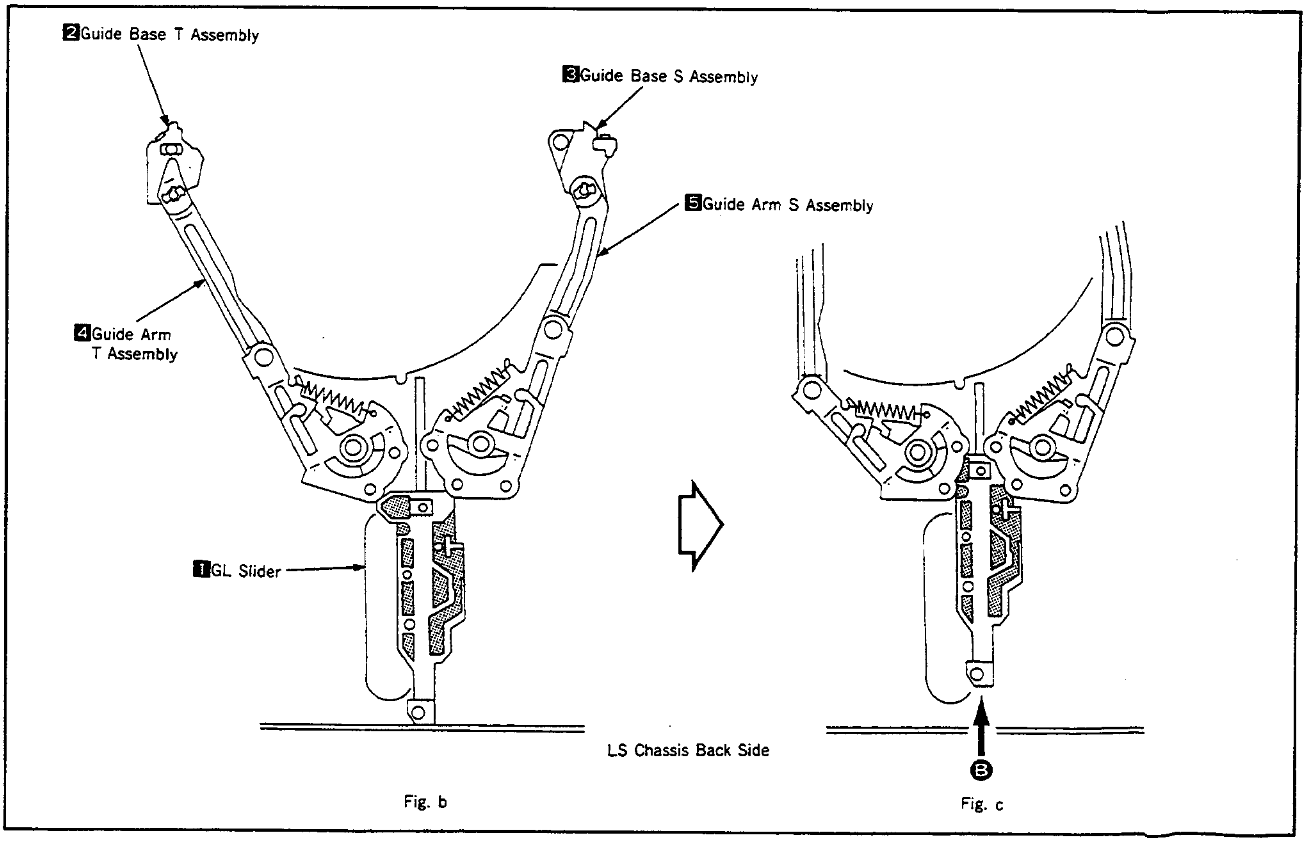

2 Guide Base T Assembly
3 Guide Base S Assembly
5 Guide Arm S Assembly
4 Guide Arm T Assembly
1 GL Slider
LS Chassis Back Side
B

Fig. b

Fig. c

Fig. 16

## 3 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers **1**, then the guide arm T assembly **2** and guide arm S assembly **3** respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

### 2. Mounting

1) Mount the guide arm T assembly **2** and guide arm S assembly **3**, then fix them with a lock washer **1** respectively.

**Note** : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

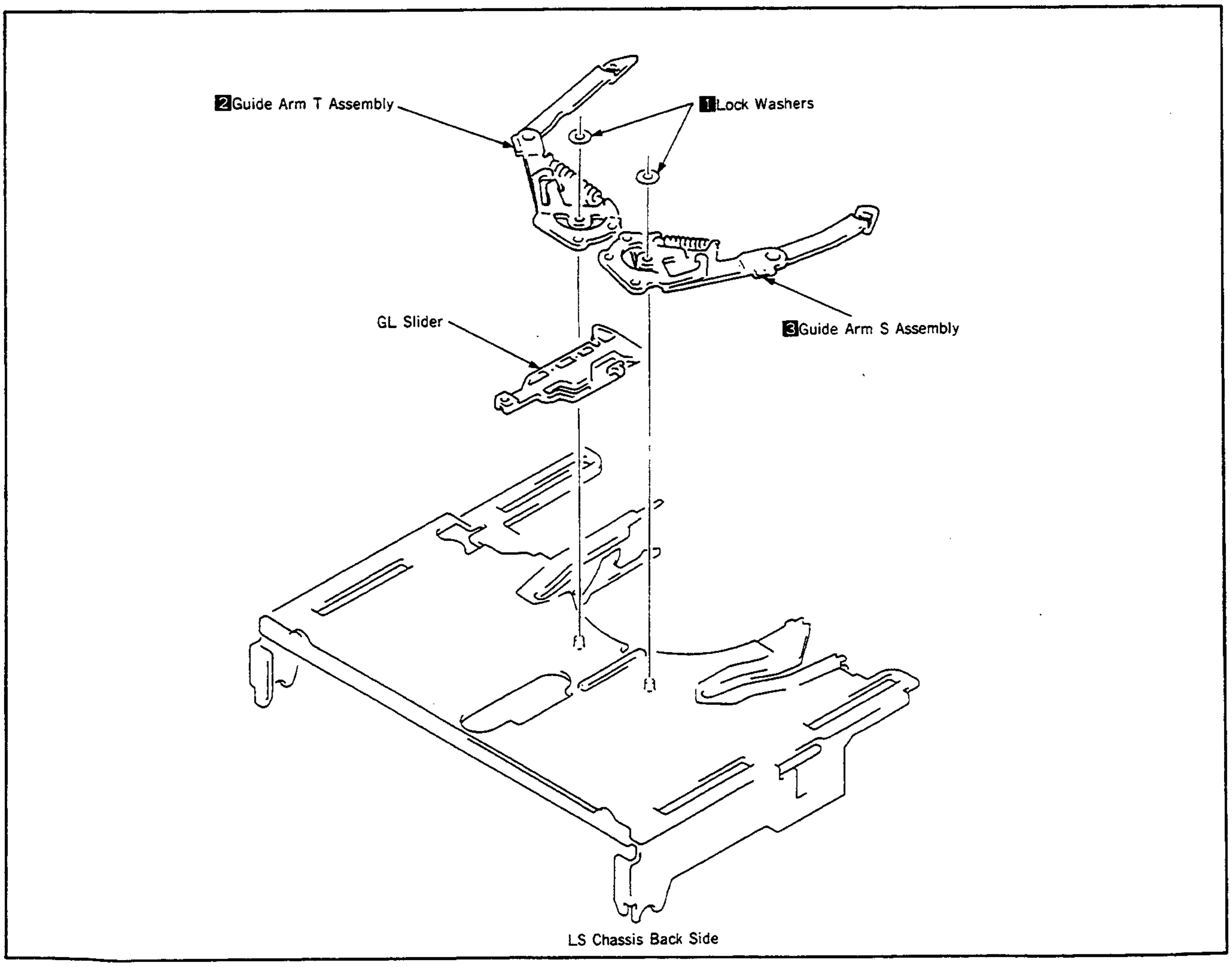


Fig. 17

## 3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw **1**, then the string **2** from the supply reel table assembly **3**. For easy removal of string block **4**, insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly **3**.
8) Remove a tension coil spring **5**.
9) Turn the TG-1 arm assembly **6** up to a portion ⓒ of LS chassis hole in the arrow Ⓐ direction so that its tab ⓑ can be disengaged (Fig. b).

### 2. Mounting

1) Pushing the S soft brake **7** toward the arrow Ⓑ, mount thesupply reel table assembly **3**.
2) Route the string **2** under the TG-1 arm asembly **6**, andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ⓒ, then turn the TG-1 arm assembly in the reverse direction of arow Ⓐ (Fig. b).
3) Wind the string **2** along the groove of supply reel t assembly **3** (Fig. a).

**Note :** Do not curl the string extremely. Also, avoid adhesion oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block **4** toward the arrow Ⓒ and tighten the screw **1** (Fig. a).
5) Engage the tension coil spring **5** to the chassis hook.

**Note :** Confirm that the string **2** is surely wound around the groove of supply reel table assembly **3** (Fig.a).

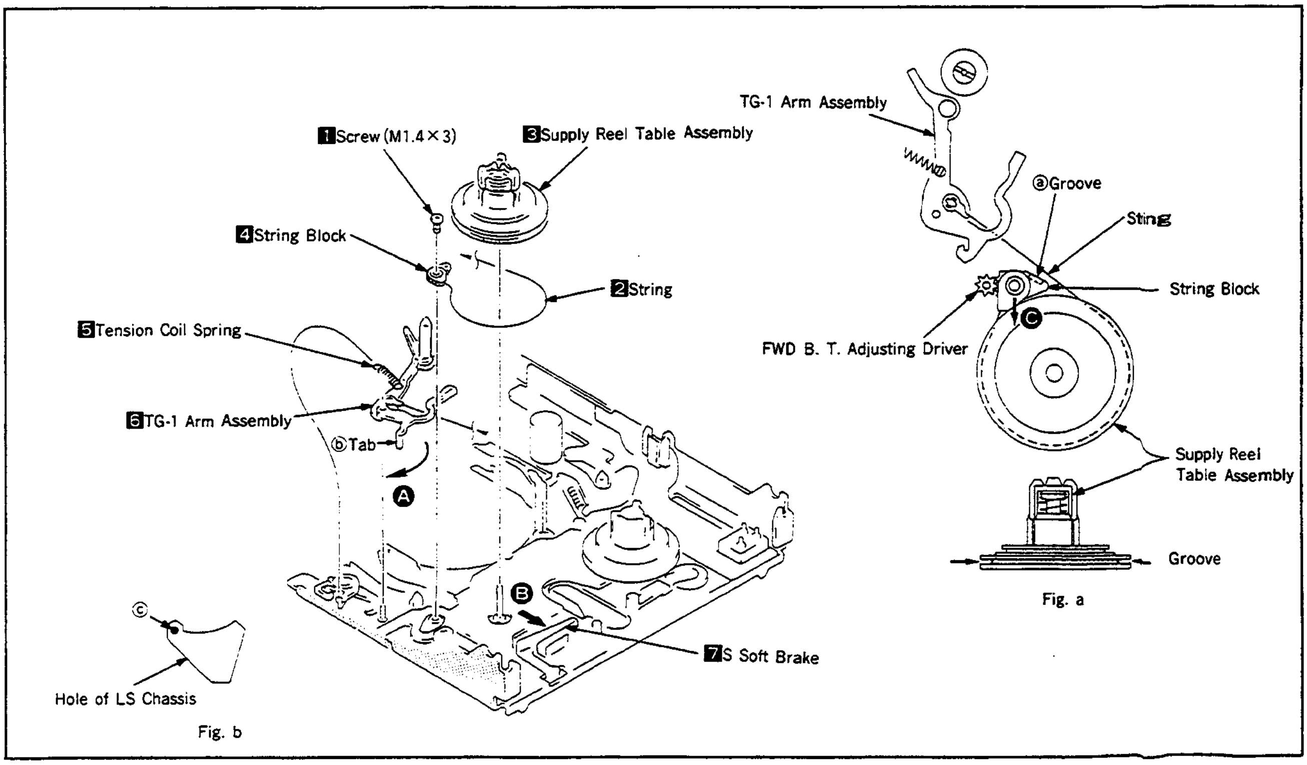
6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

**Note :** At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

**Note :** Referring to 3-22, adjust the tension regulator position.

**Note :** Referring to 3-23, adjust the forward back tension.



1 Screw (M1.4 × 3)
3 Supply Reel Table Assembly
4 String Block
2 String
5 Tension Coil Spring
6 TG-1 Arm Assembly
ⓑ Tab
Ⓐ
Ⓑ
7 S Soft Brake
ⓒ
Hole of LS Chassis
Fig. b
TG-1 Arm Assembly
ⓐ Groove
Sting
String Block
Ⓒ
FWD B. T. Adjusting Driver
Supply Reel Table Assembly
Groove
Fig. a

Fig. 18

## 3 . TG-2 ROLLER ASSEMBLY (Fig. 19)

### 1. Removal

1) Remove the TG-2 roller assembly **1** .
2) Remove a compression coil spring **2** .

### 2.Mounting

1) Insert a compression coil spring **2** into the boss on chassis.
2) Rotate gently the TG-2 roller assembly **1** until the screw is engaged.

### 3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

**Note** : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

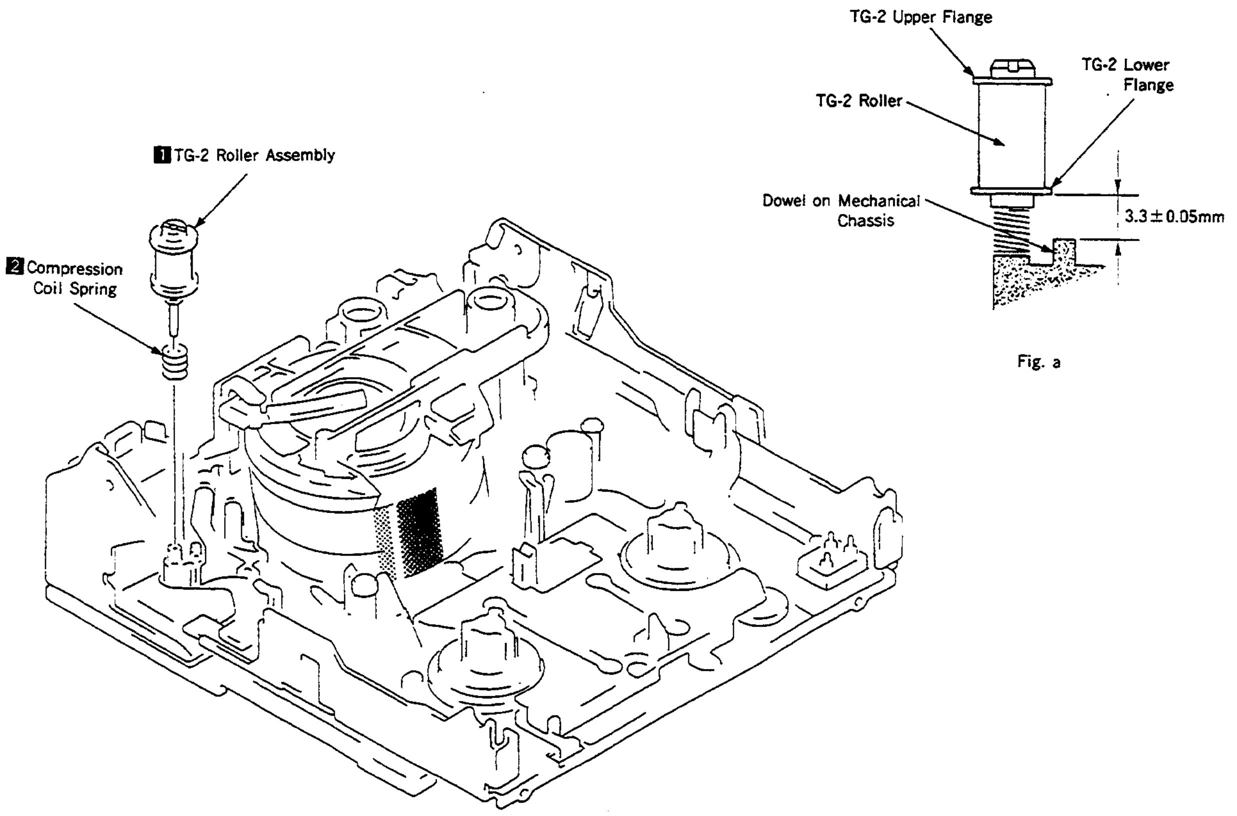

TG-2 Upper Flange
TG-2 Lower Flange
TG-2 Roller
Dowel on Mechanical Chassis
3.3±0.05mm
Fig. a
1 TG-2 Roller Assembly
2 Compression Coil Spring

Fig. 19

### 3-12. TG-7 ARM ASSEMBLY (Fig. 20)

#### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring 1 in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly 2 from the shaft of mechanical-chassis.

#### 2. Mounting

1) Mount the TG-7 arm assembly 2 to the shaft of mechanic chassis.
2) Mount the TG-7 arm Leaf spring 1 to the mechanicalchasis.
   *Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

**Note** : After mounting, perform 4. TAPE PATH ADJUSTMENT.

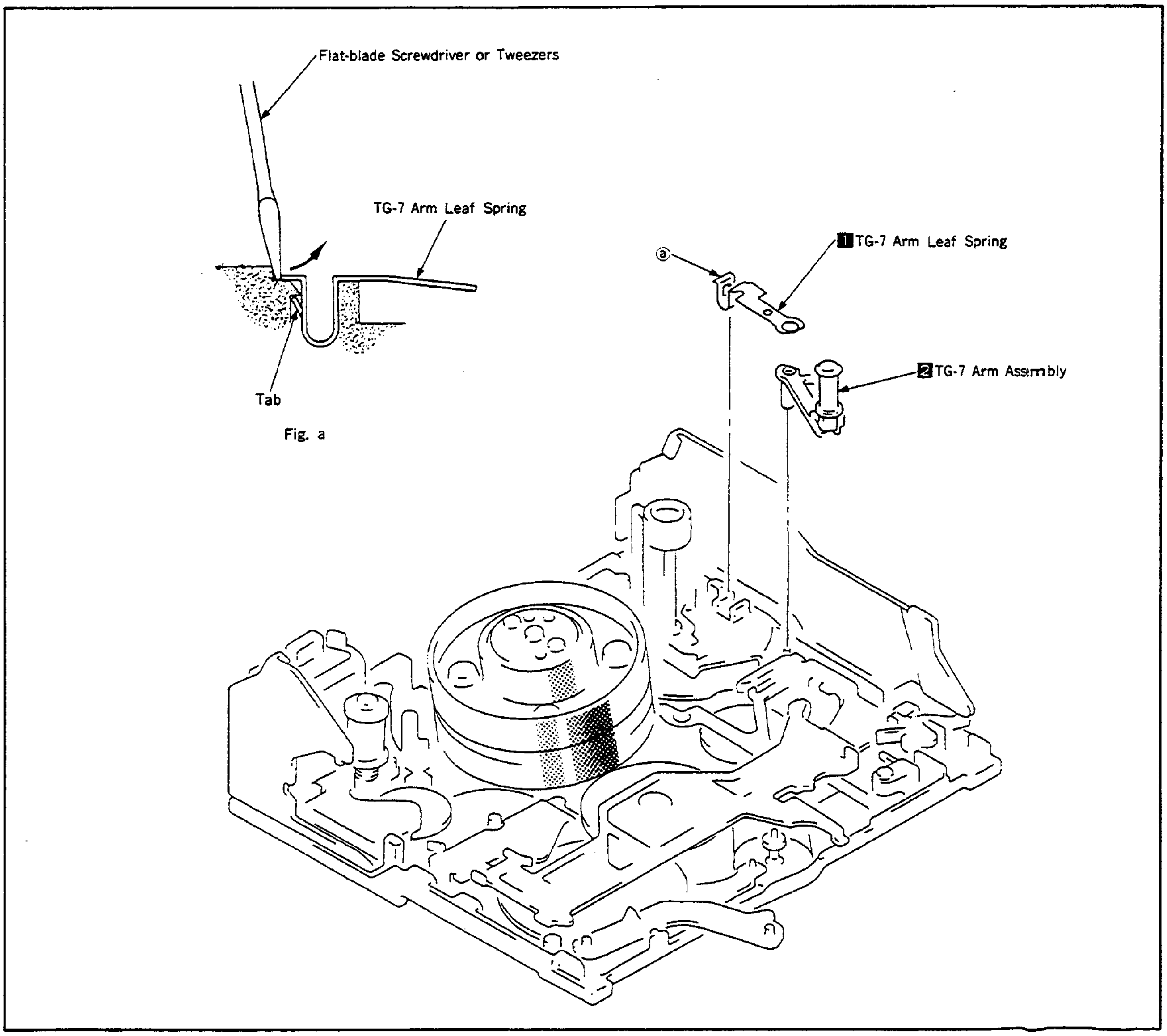


Fig. 20

## 3 . LM MOTOR ASSEMBLY (Fig. 21)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the LOAD mode (at the position where the FF arm assembly is not above the screw ❶).
6) Remove two screws ❶, then the LM motor assembly ❷.

### 2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly ❷ with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws ❶.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

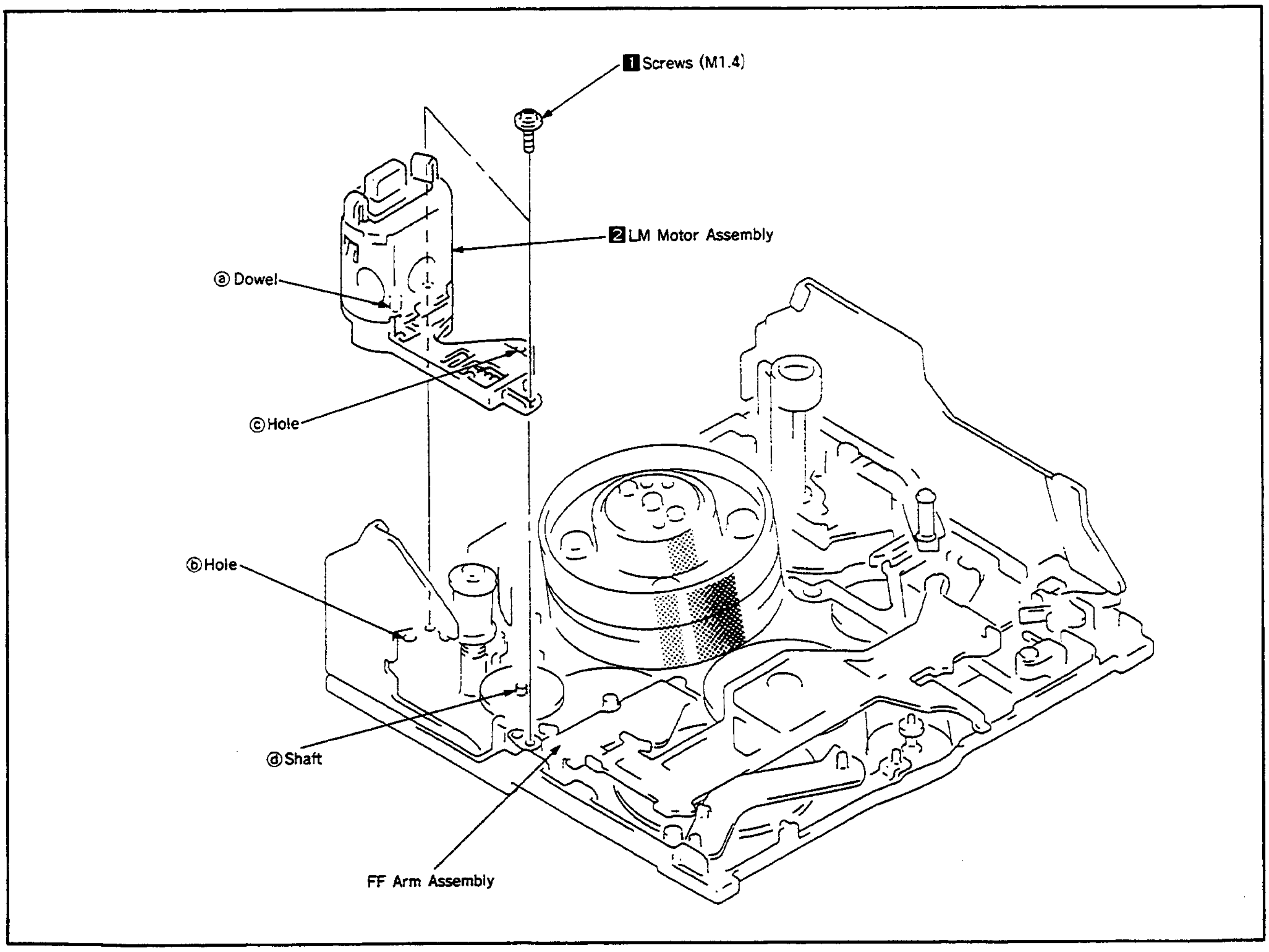


Fig. 21

## 3-14. LS ARM (Fig. 22)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm ❶ from the shaft of mechanical chassis.

**Note** : Take care not to drop the LS roller ❷.

### 2. Mounting

1) Mount the LS arm ❶ meeting with mechanical chassis sh and cam groove.

**Note** : Move the LS arm ❶ in arrow direction to confirm that the LS roller ❷ is surely inserted.

2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

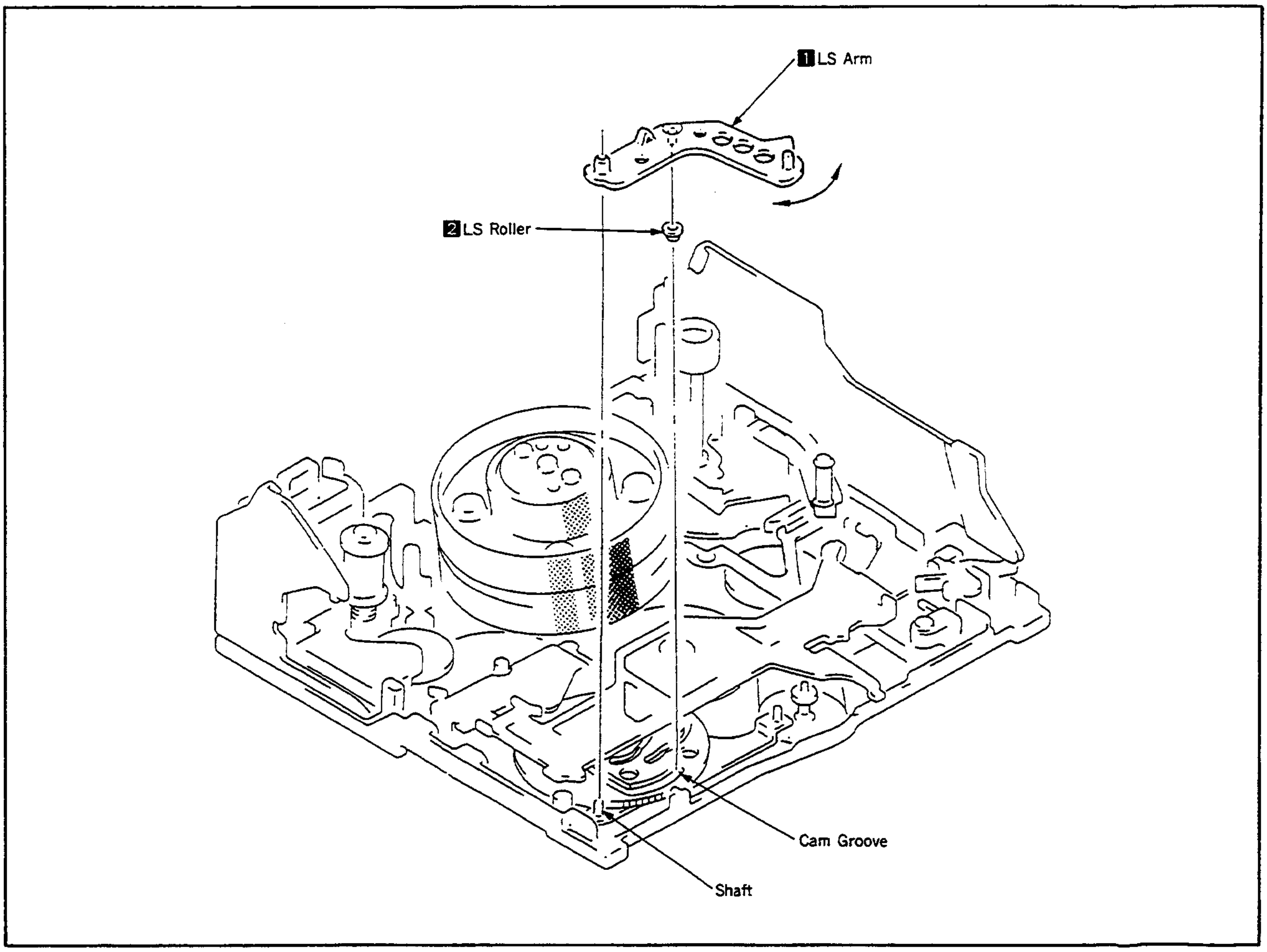


Fig. 22

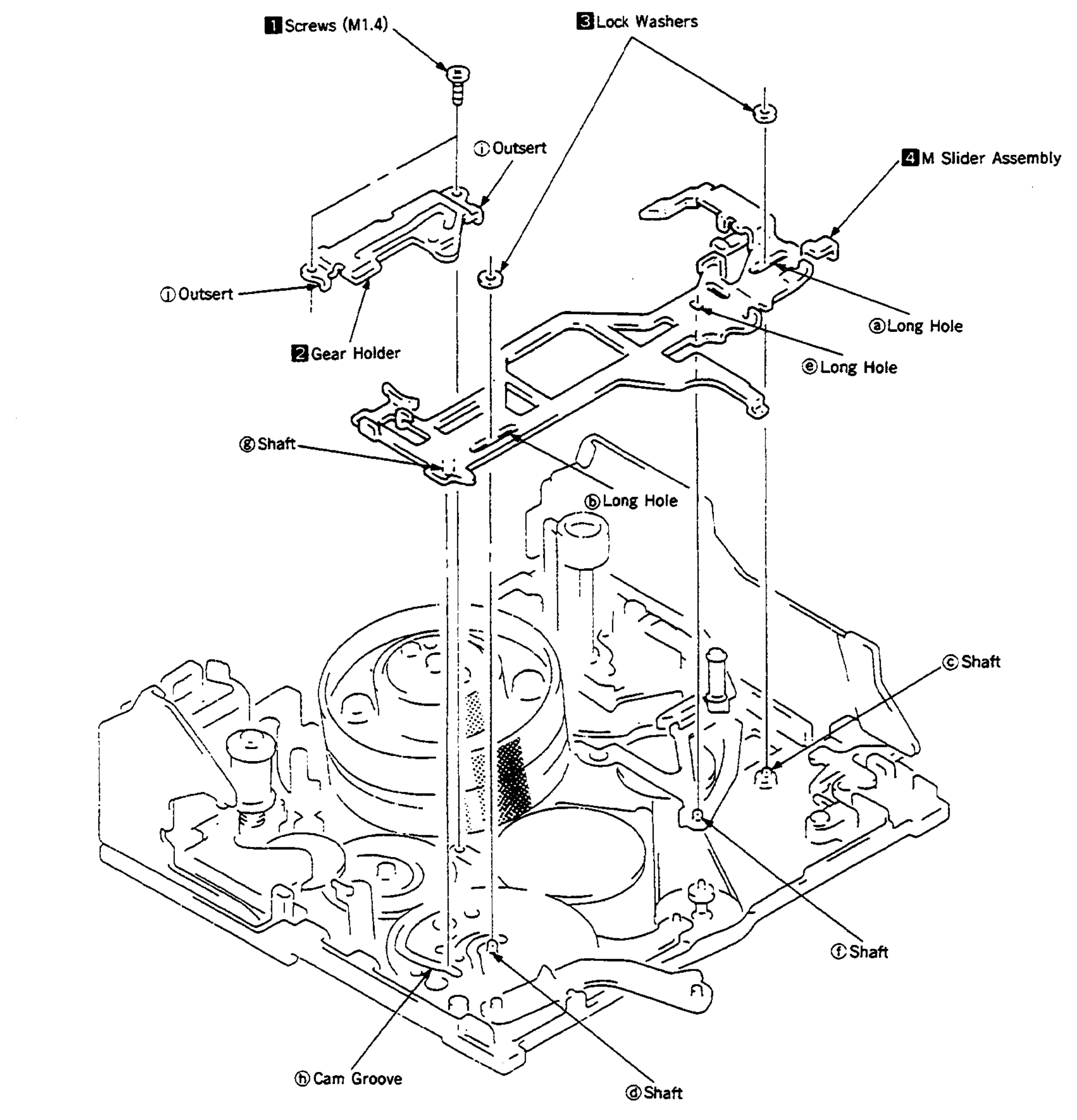
## . M SLIDER ASSEMBLY (Fig. 23)

### Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws ❶, then the gear holder ❷.
6) Remove two lock washers ❸, then the M slider assembly ❹.

### 2. Mounting

1) Mount the M slider assembly ❹, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers ❸.
3) Mount the gear holder ❷ with its outserts ⓘ and ⓙ inserted into holes in the mechanical chassis.
4) Tighten two screws ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.



❶Screws (M1.4)
❸Lock Washers
ⓘOutsert
❹M Slider Assembly
ⓙOutsert
ⓐLong Hole
❷Gear Holder
ⓔLong Hole
ⓖShaft
ⓑLong Hole
ⓒShaft
ⓕShaft
ⓗCam Groove
ⓓShaft

Fig. 23

## 3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer ❶, then pinch press arm assembly ❷.

### 2.Mounting

1) Mount the pinch press arm assembly ❷, inserting its sh ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer ❶.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

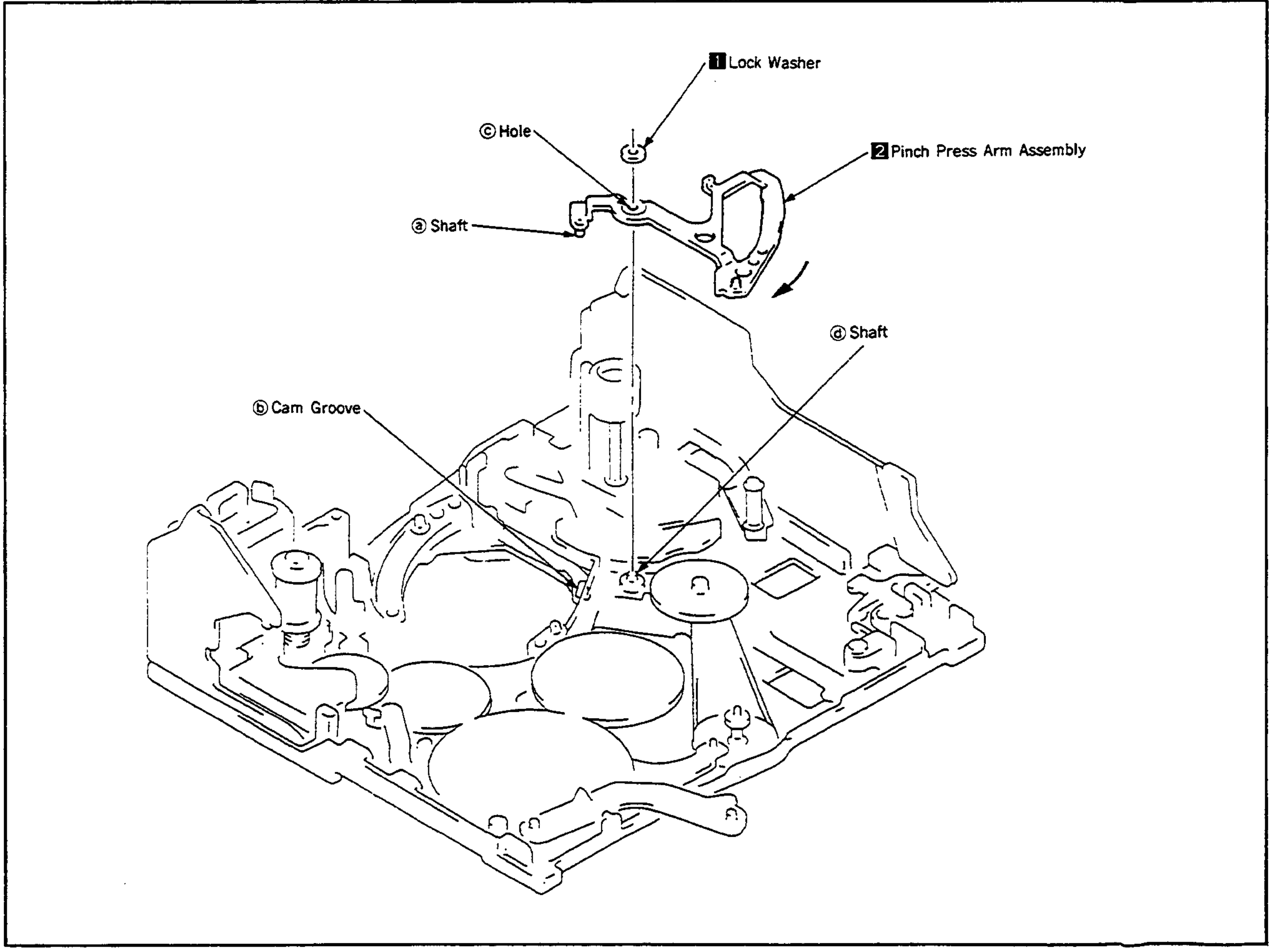


Fig. 24

## . CAM (Fig. 25)

### emoval

Referring to 1-1, remove the cassette compartment assembly.
Referring to 3-1, remove the Retainer, Gooseneck assembly.
Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam **1**.

### 2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

**Note :** Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam **1**, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

**Note :** Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

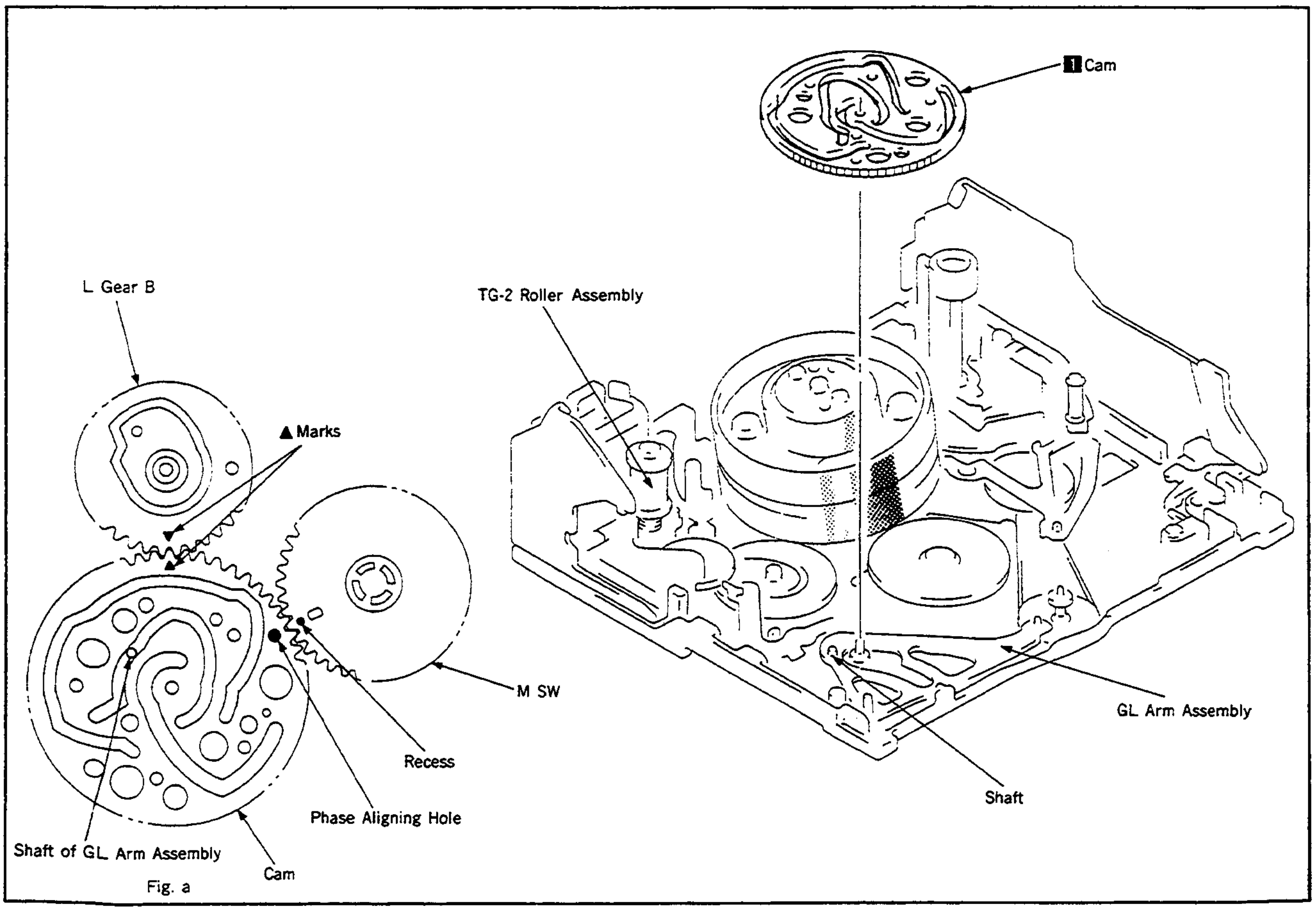


Fig. 25

### 3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly **1**.

2. Mounting

1) Mount the GL arm assembly **1** with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

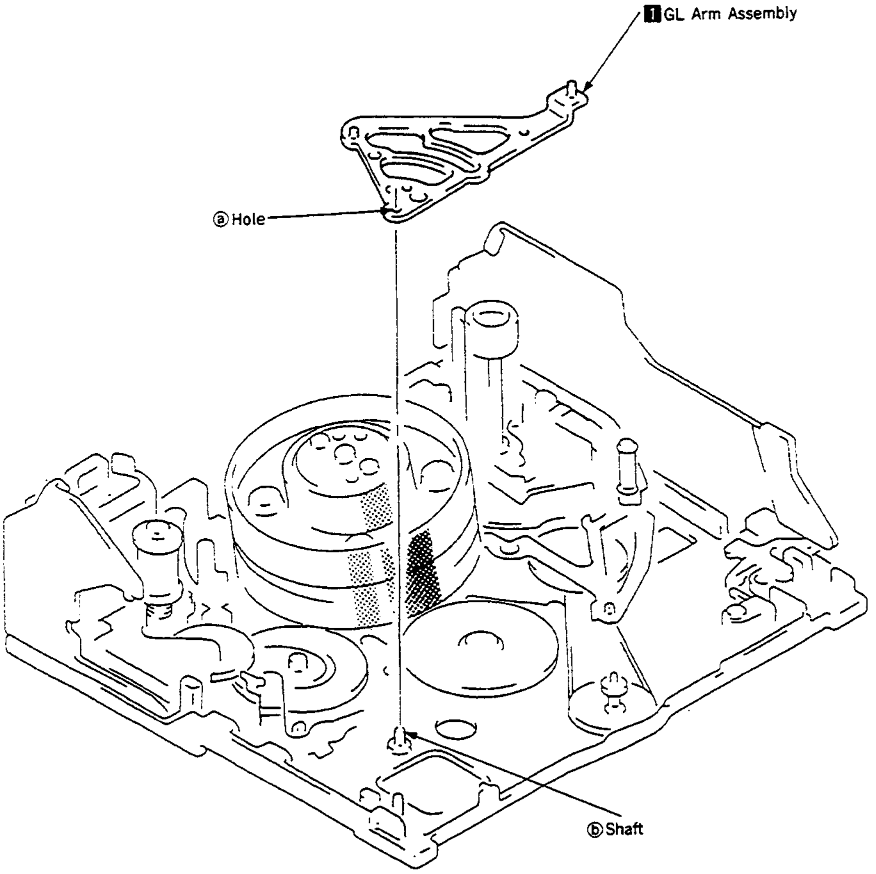


Fig. 26

## 9. L GEAR A AND L GEAR B (Fig. 27)

### Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly ❶.
10) Remove the L gear A ❷.
11) Remove the L gear B ❸.

### 2. Mounting

1) Insert the L gear B ❸ into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A ❷ into the shaft of mechanical chassis.
3) Mount the FF arm assembly ❶ with its two shafts inserted into the cam groove of L gear B ❸ and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

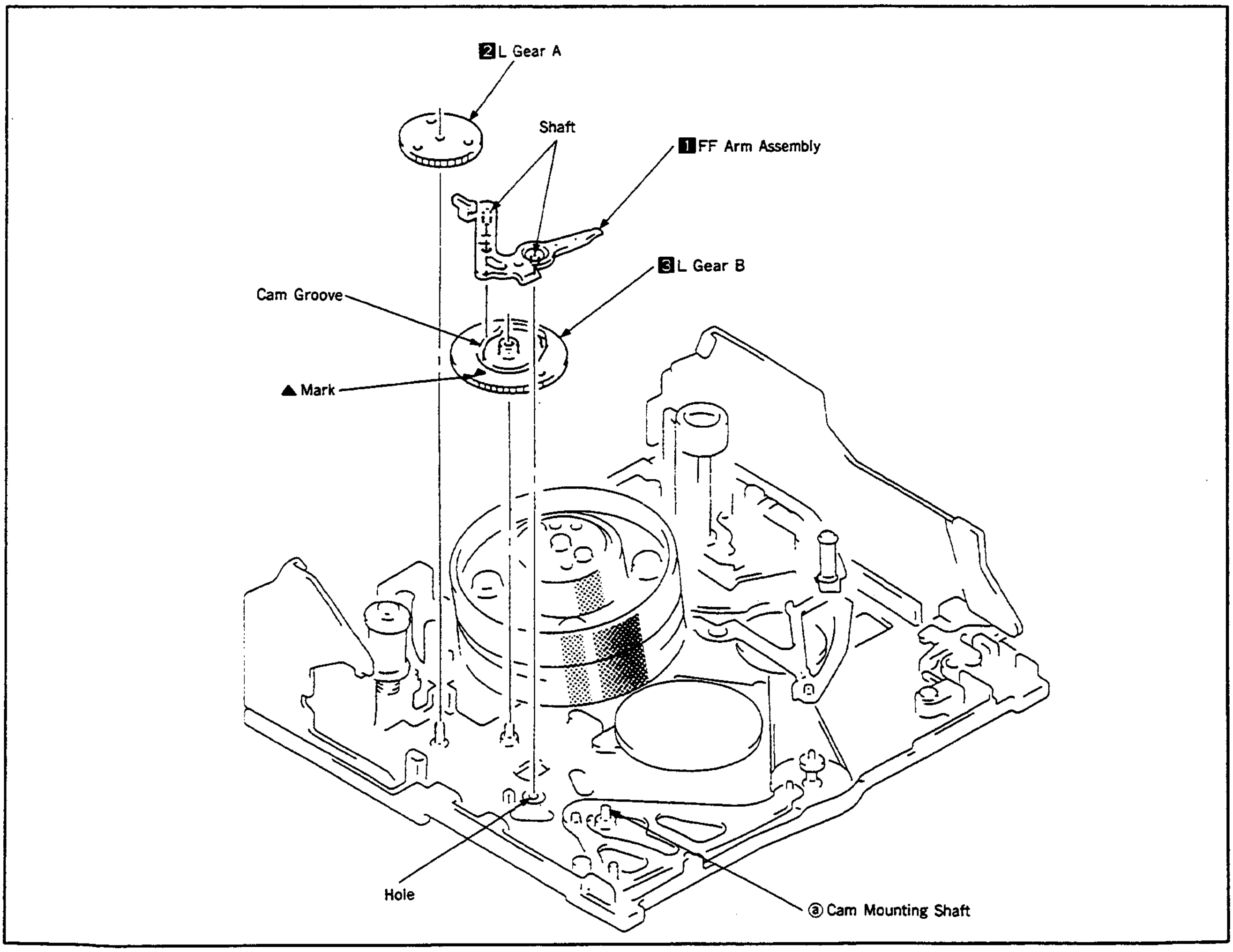


Fig. 27

## 3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer **1**, then remove together the Change gear assembly **2**, relay belt **3** and relay pulley **4**.

### 2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt **3** to the relay pulley **4** and Change gear assembly **2**, mount respective parts.
   *At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

**Note** : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer **1**.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.

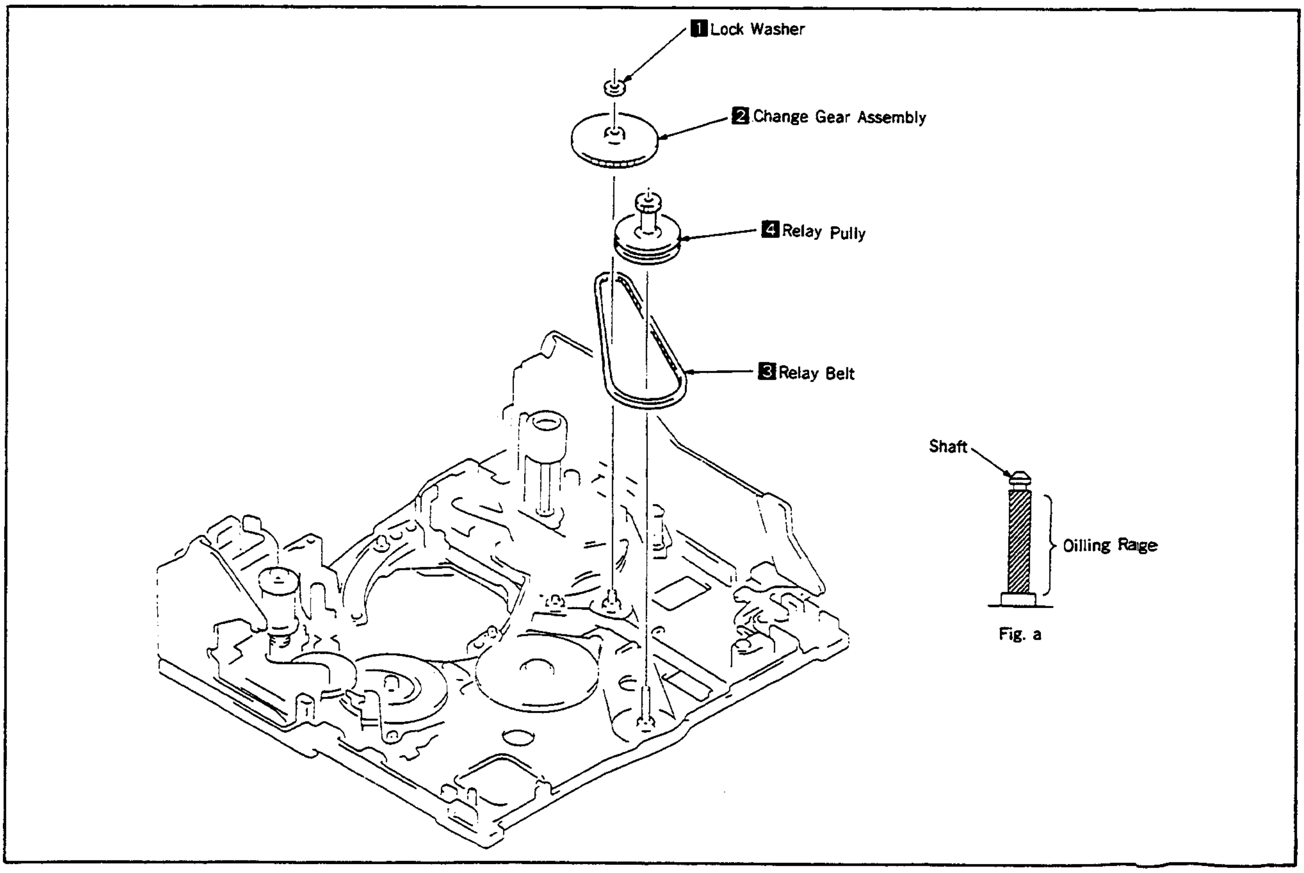


Fig. 28

## 3-21. ROTARY UPPER DRUM REPLACEMENT

### 1. Removoal

· If possible, make a recording before removal.

1) Remove the two screws ❶ (Fig. 29).
2) Mount the jig ❷ (Ref. No. J-10) with the two supplied screws ❸, then screw the attached hexagon socket screws ❹ to the jig ❷. The rotary upper drum ❺ will move upward and come off (Fig. 30).

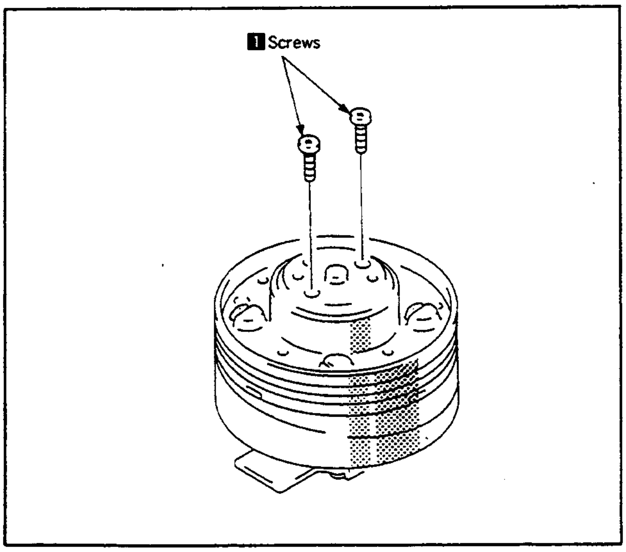


Fig. 29

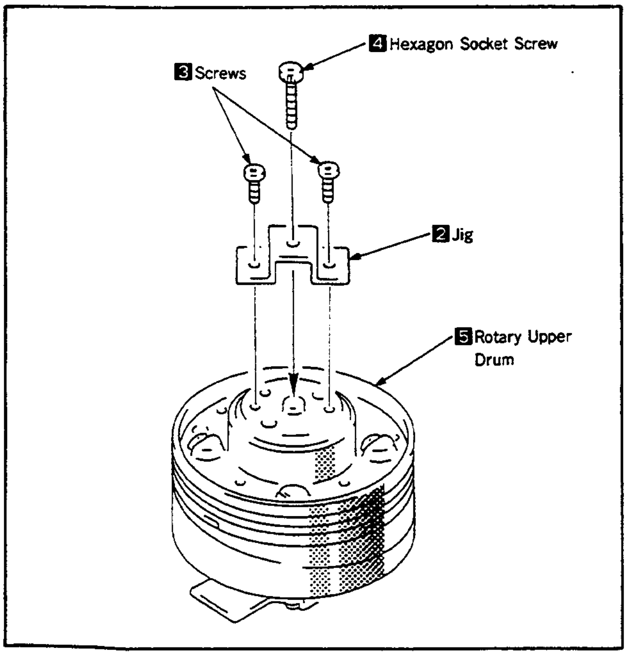


Fig. 30

### 2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❻ (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum ❺ by passing the jig through its positioning hole ❼. (Fig.31)
3) Remove the jig ❻ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws ❶ alternately (Fig.29).
4) Insert the jig ❻ into the positioning hole ❼ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.

**Note :** After installing, be sure to perform tape path adjustment as described in section 4.

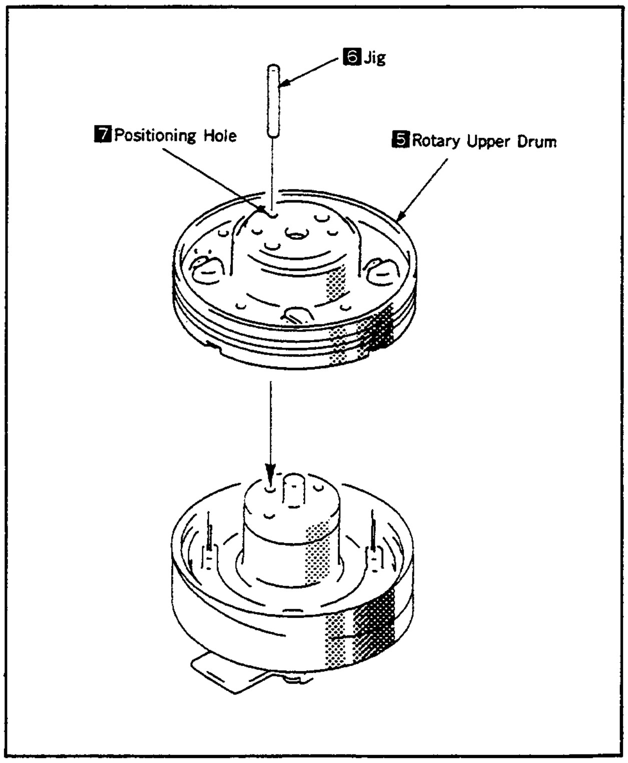


Fig. 31

## 3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

### 1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw ■.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow Ⓐ using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow Ⓑ.
6) Tighten the screw ■.

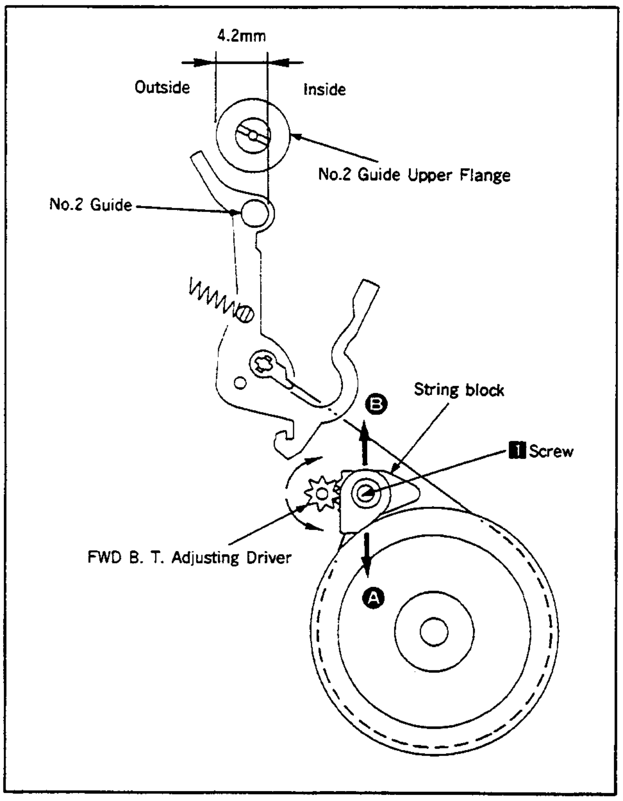

4.2mm
Outside
Inside
No.2 Guide Upper Flange
No.2 Guide
String block
Ⓑ
■ Screw
FWD B. T. Adjusting Driver
Ⓐ

Fig. 32

## 3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
   If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

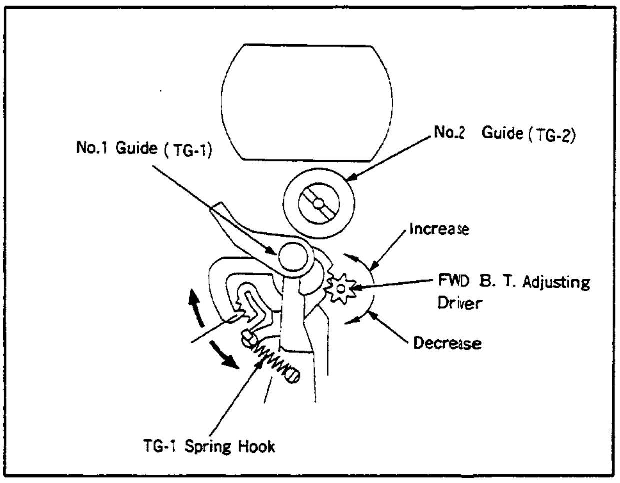

No.1 Guide (TG-1)
No.2 Guide (TG-2)
Increase
FWD B. T. Adjusting Driver
Decrease
TG-1 Spring Hook

Fig. 33

## 3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

## 4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.

This does away a tracking control knob and allows accurate track tracing.

On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.

Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series

Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

**Note** : Setting of PATH mode = TRACK SHIFT mode

If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

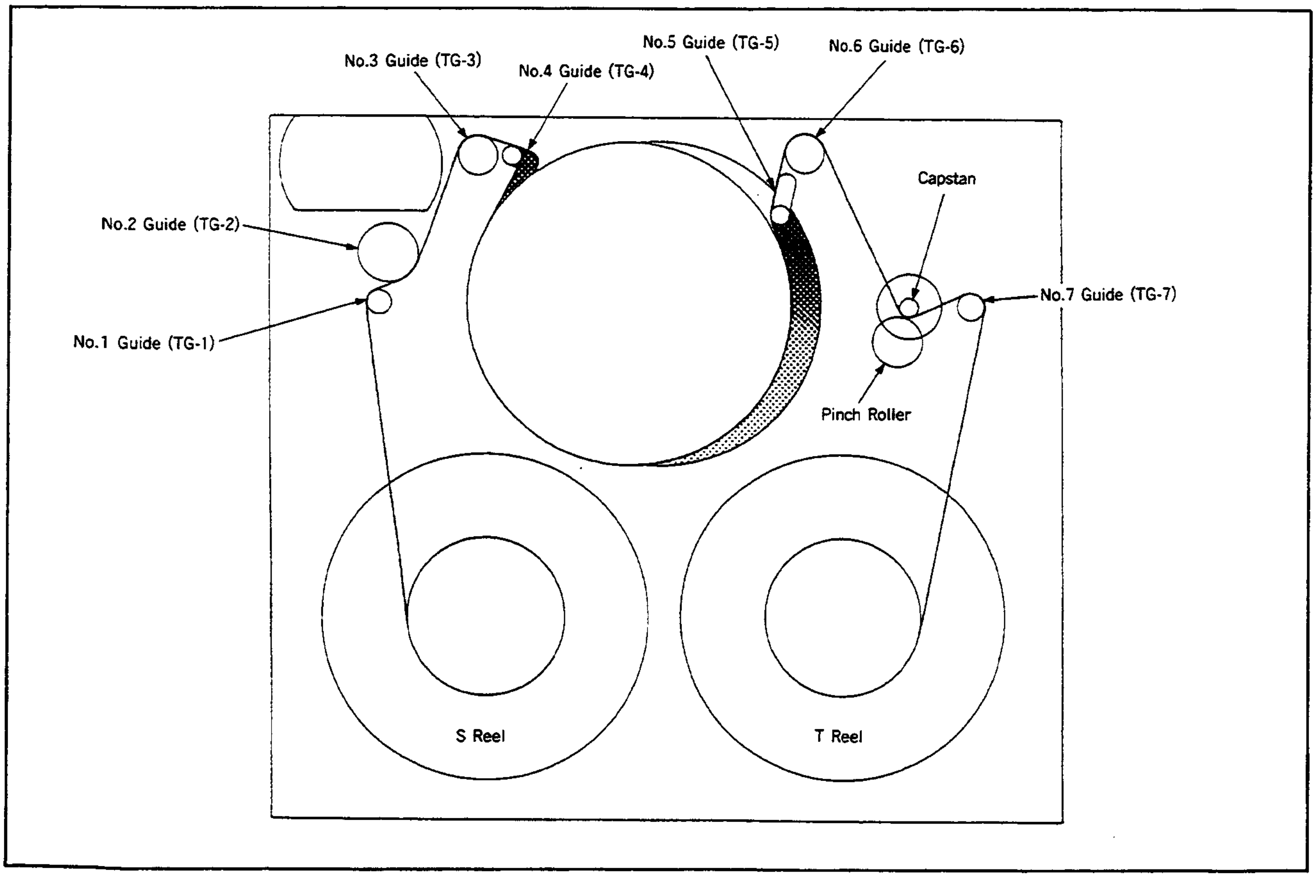


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]
The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).
Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

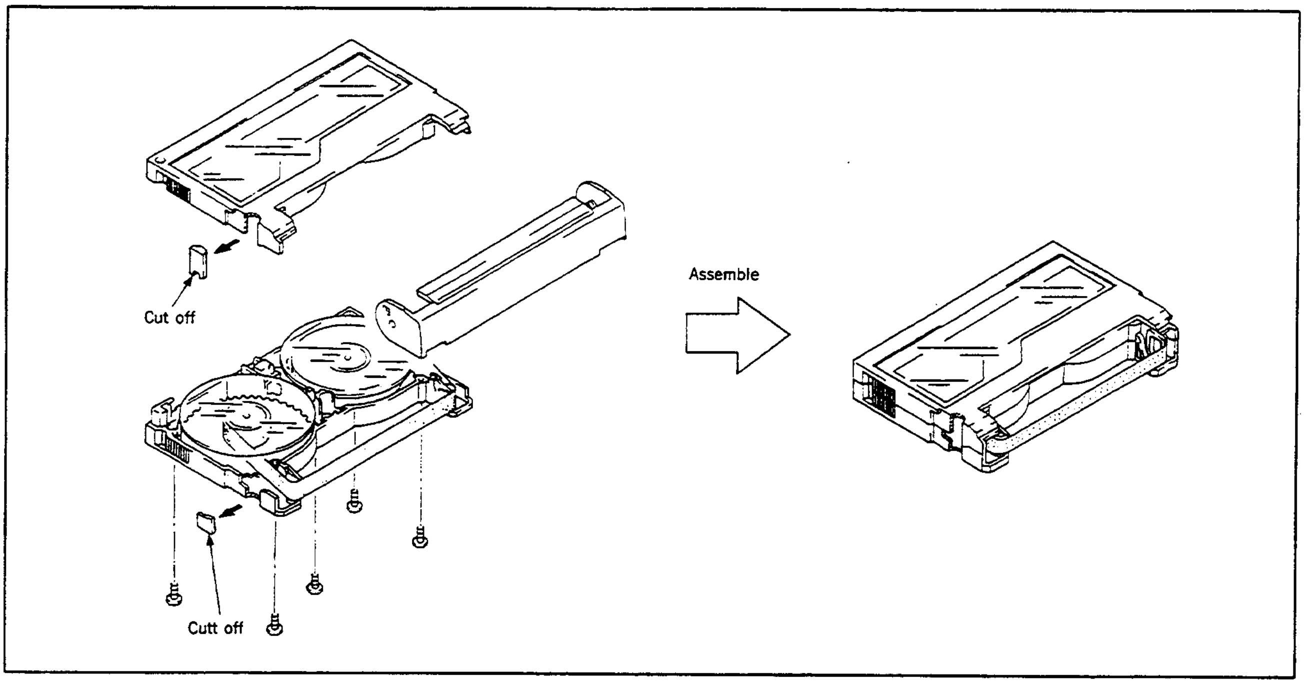


Fig. 34-B

### 4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
   CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
   CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

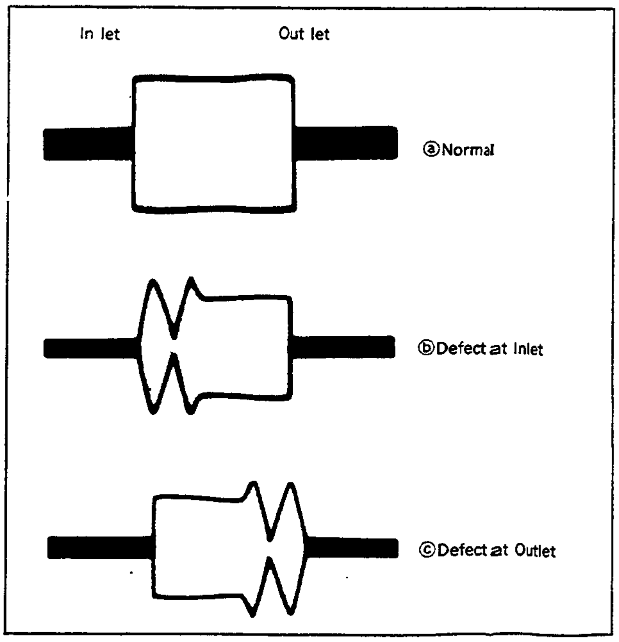


Fig. 35

## 4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw ❶ and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw ❶ to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw ❷ and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw ❷ to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

**Note** : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

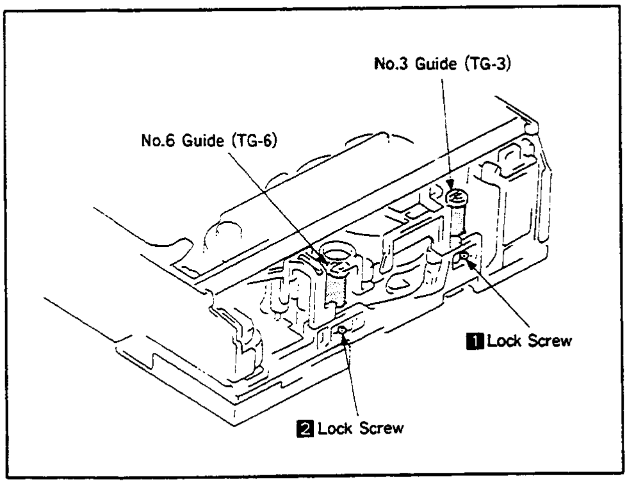


Fig. 36

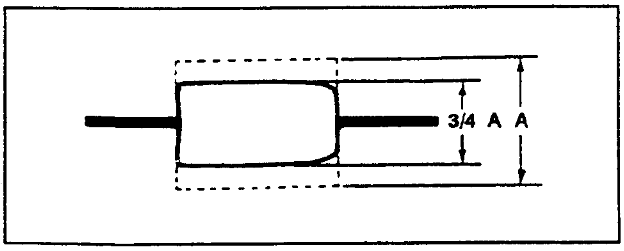


Fig. 37

## 4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

### 4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

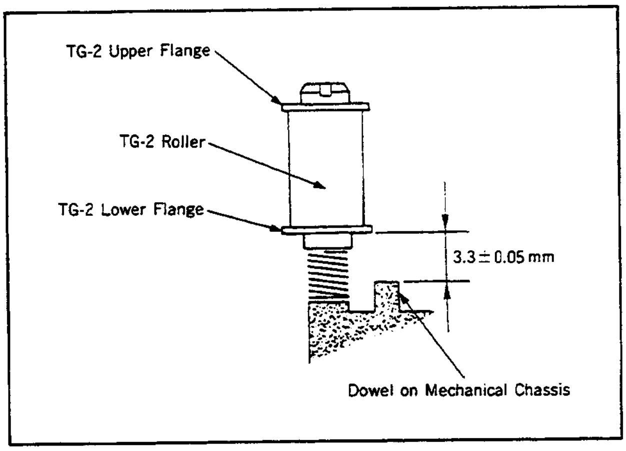


Fig. 38

**[Reference]**
**This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.**

| Guide | Guide adjustment | Rotating direction of adjustment screw |
|---|---|---|
| TG-2, 3, 6 | Raise | Counterclockwise |
| | Lower | Clockwise |
| TG-7 | Raise | Clockwise |
| | Lower | Counterclockwise |

### 4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No.2 guide (TG-2) ❶ (Fig. 39). If it is, turn the upper flange ❸ of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counterclockwise and repeat step 5.
   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).

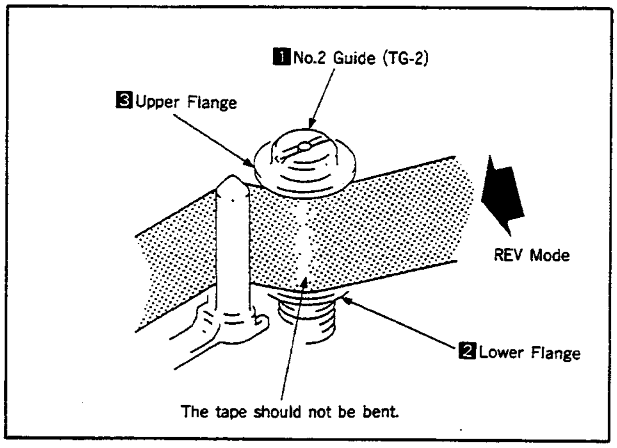


Fig. 39

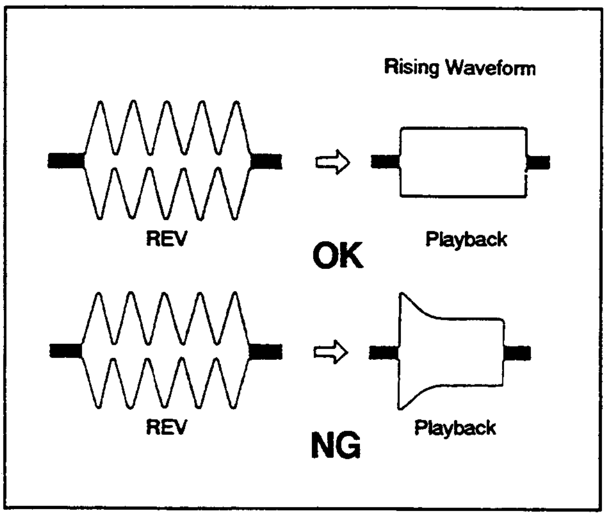


Fig. 40

### 4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

**Note** : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the hight adjusting screw ❹ of the No.7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) ❸ until bending is within the specification (0.5mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3mm or less, adjustment can be considered completed.

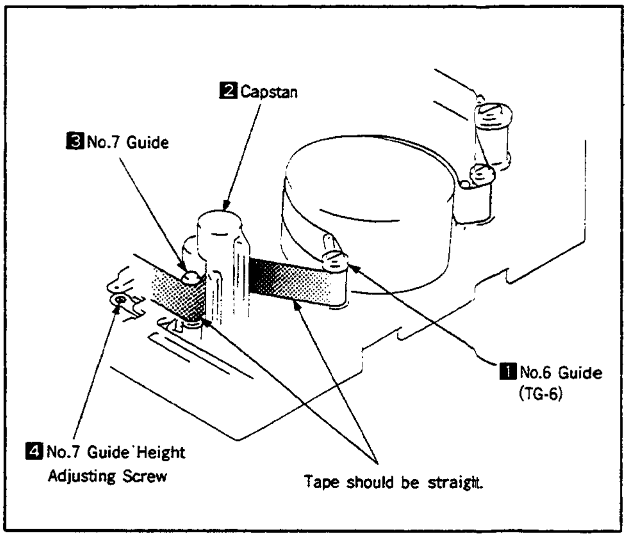


Fig. 41

### 4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig.42).
   Otherwise, perform section 4-2 Tracking Fine Adjustment.

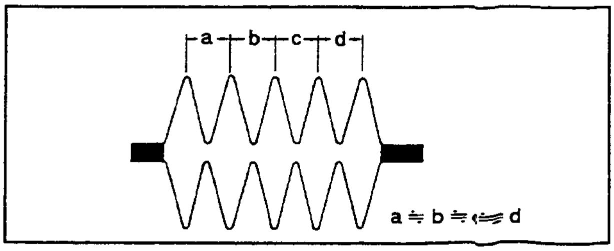


Fig. 42

## 4-6. CHECK AFTER ADJUSTMENT

### 4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value (EMIN) is 65 % of the maximum value (EMAX) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

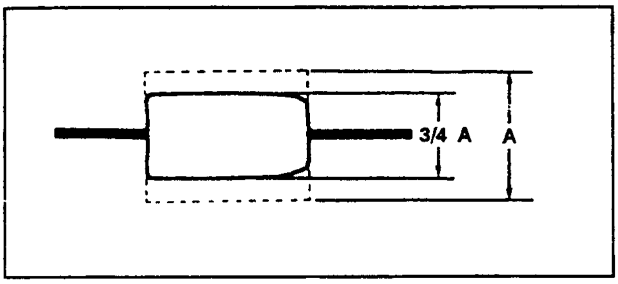
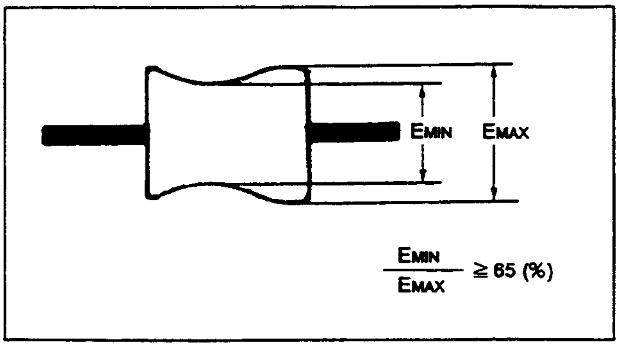
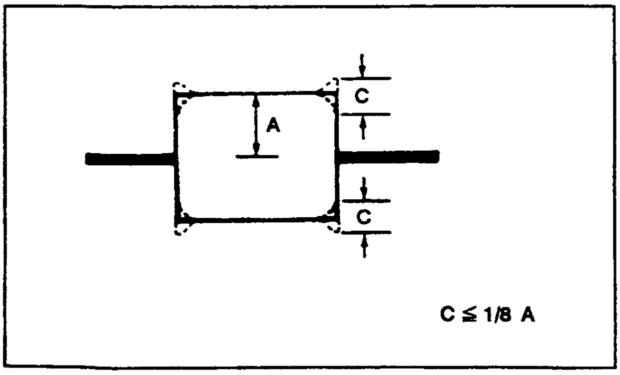


Fig. 43



$$\frac{E_{MIN}}{E_{MAX}} \geq 65\ (\%)$$

Fig. 44



$C \leq 1/8\ A$

Fig. 45

### 4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

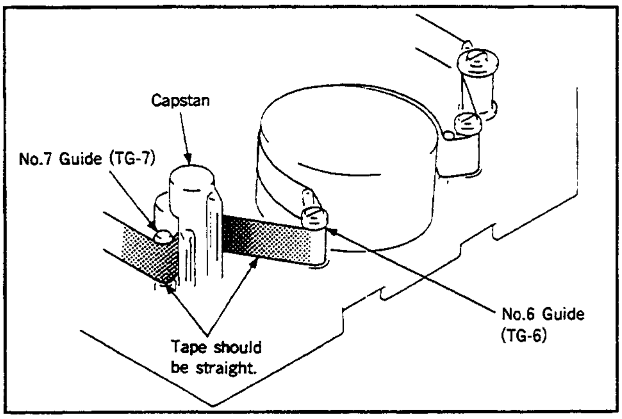

Capstan
No.7 Guide (TG-7)
No.6 Guide (TG-6)
Tape should be straight.

Fig. 46

### 4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

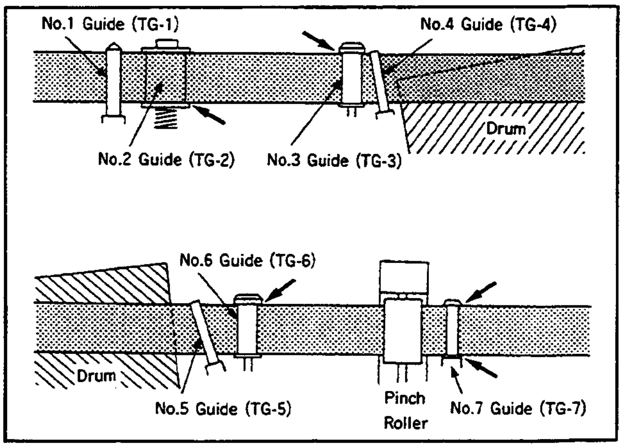

No.1 Guide (TG-1)
No.4 Guide (TG-4)
Drum
No.2 Guide (TG-2)
No.3 Guide (TG-3)
No.6 Guide (TG-6)
Drum
No.5 Guide (TG-5)
Pinch Roller
No.7 Guide (TG-7)

Fig. 47

# 8mm Video MECHANICAL ADJUSTMENT MANUAL IV

## A MECHANISM
## SUPPLIMENT-2

**Video 8**

### 〈Connection of Mode Selector IV Conversion Connector〉

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

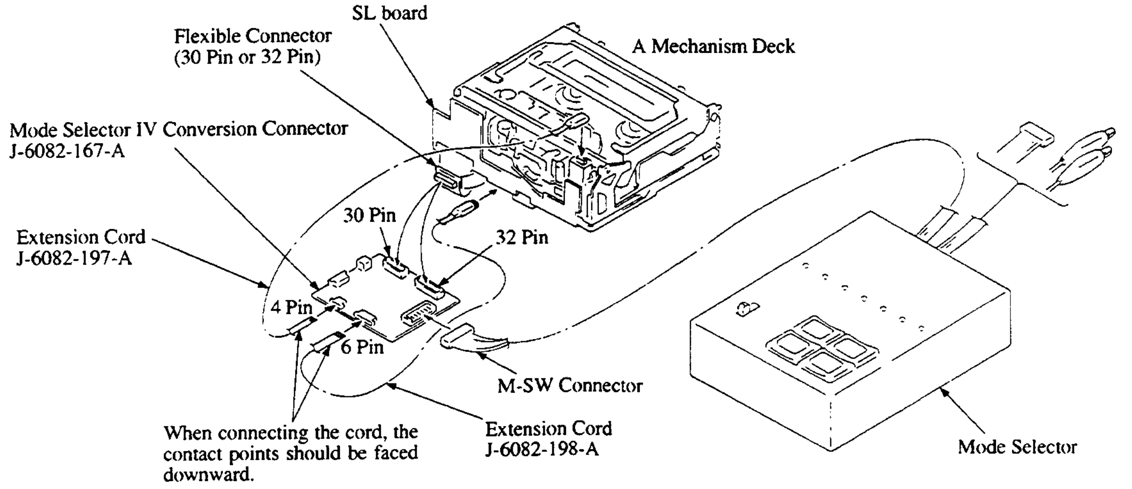
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

(CCD-FX300 series, FX400 series. FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477))

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.


SL board
Flexible Connector
(30 Pin or 32 Pin)
A Mechanism Deck
Mode Selector IV Conversion Connector
J-6082-167-A
30 Pin
32 Pin
Extension Cord
J-6082-197-A
4 Pin
6 Pin
M-SW Connector
When connecting the cord, the contact points should be faced downward.
Extension Cord
J-6082-198-A
Mode Selector

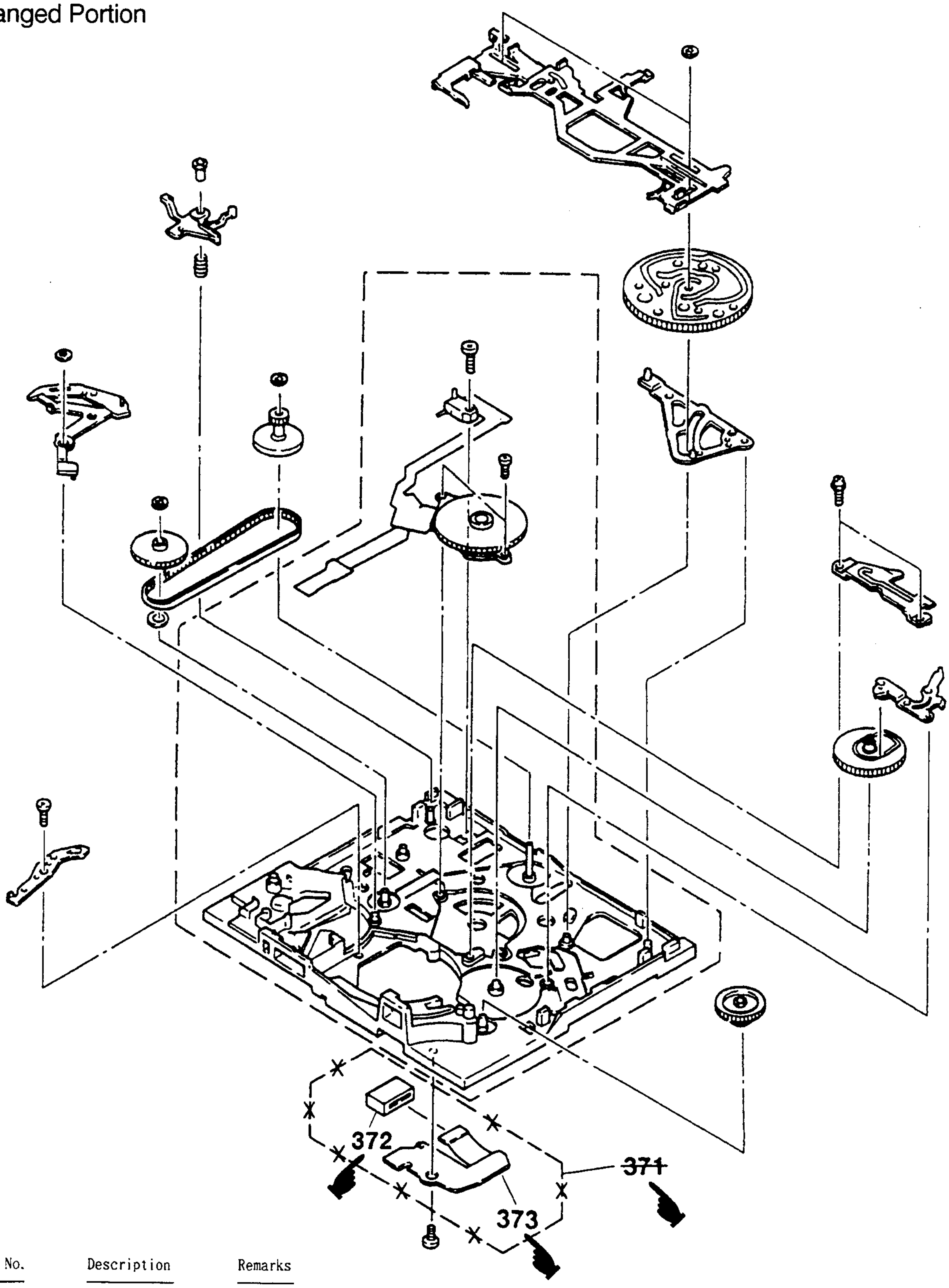
### 〈CORRECTION〉

P10. 2-4 Service jigs list

| | | Incorrect | | Correct |
|---|---|---|---|---|
| J-15 | FWD B.T adjusting driver | J-6082-182-A | ➡ | J-6082-187-A |

# MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



| Ref.No. | Part No. | Description | Remarks |
|---|---|---|---|
| ~~371~~ | ~~A-7040-311-A~~ | ~~FP-444 ASSY~~ | ☛ |
| 372 | 1-691-254-13 | CONNECTOR, TRANSLATION 10P | ☛ |
| 373 | 1-641-639-13 | FP-442 FLEXIBLE BOARD | ☛ |

**Sony Corporation**
**Personal Video Group**

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# 8mm Video MECHANICAL ADJUSTMENT MANUAL IV

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Personal Video Group

English
92C18143-1
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Published by Customer Relations and Service Group

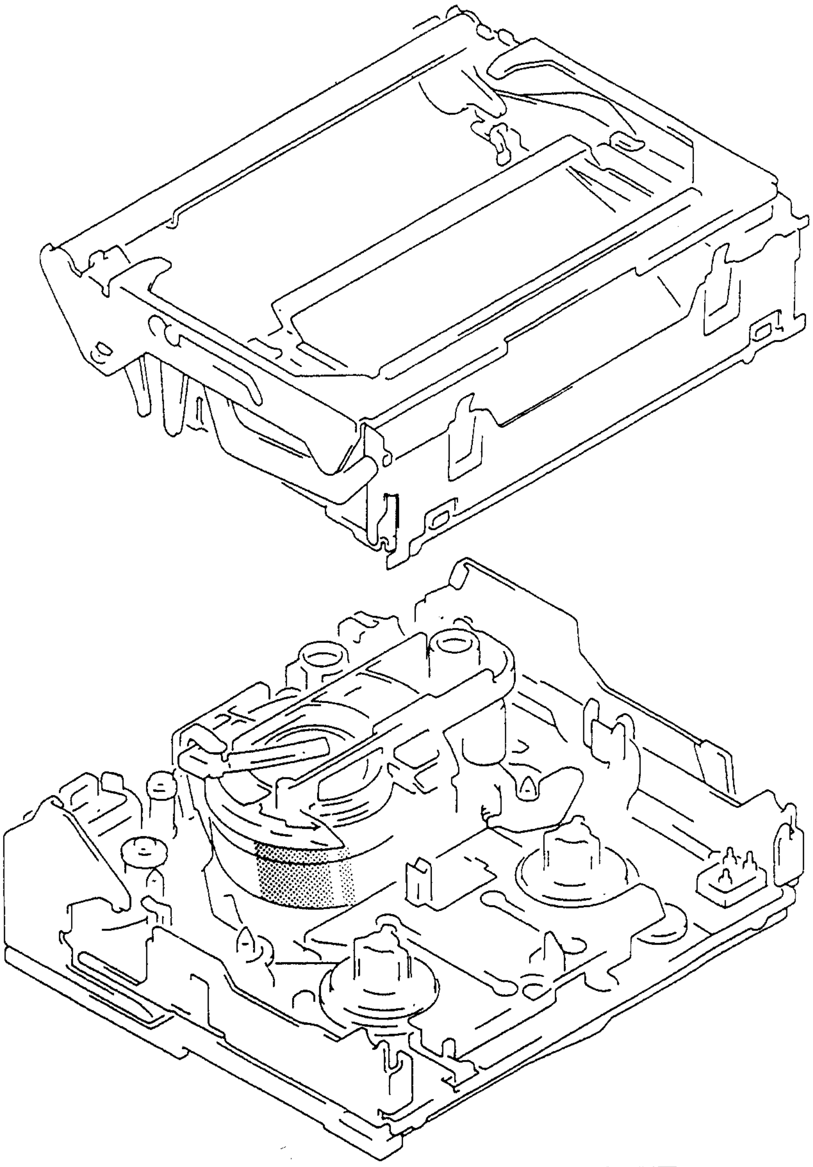
# 8 mm Video MECHANICAL ADJUSTMENT MANUAL IV

V12995

## A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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# 1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the $\boxed{\text{USE}}$ mode. (To select the $\boxed{\text{USE}}$ mode, refer to "1-3, Handling of Mode Selector".)

## 1-1. CASSETTE COMPARTMENT ASSEMBLY

### 1. Removal (Fig. 1)

1) Select the $\boxed{\text{USE}}$ mode.
2) Push the part ⓐ of lock arm ❶ toward the arrow 🅐 to unlock from lock guide ❷, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws ❸ and remove the LS frame ❹ toward the arrow 🅑.
4) With the cassette compartment assembly ❺ pushed in arrow 🅒 direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow 🅓 to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively.
   In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly ❺ in the opposite direction of arrow 🅒 until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow 🅓 to remove the cassette compartment assembly.

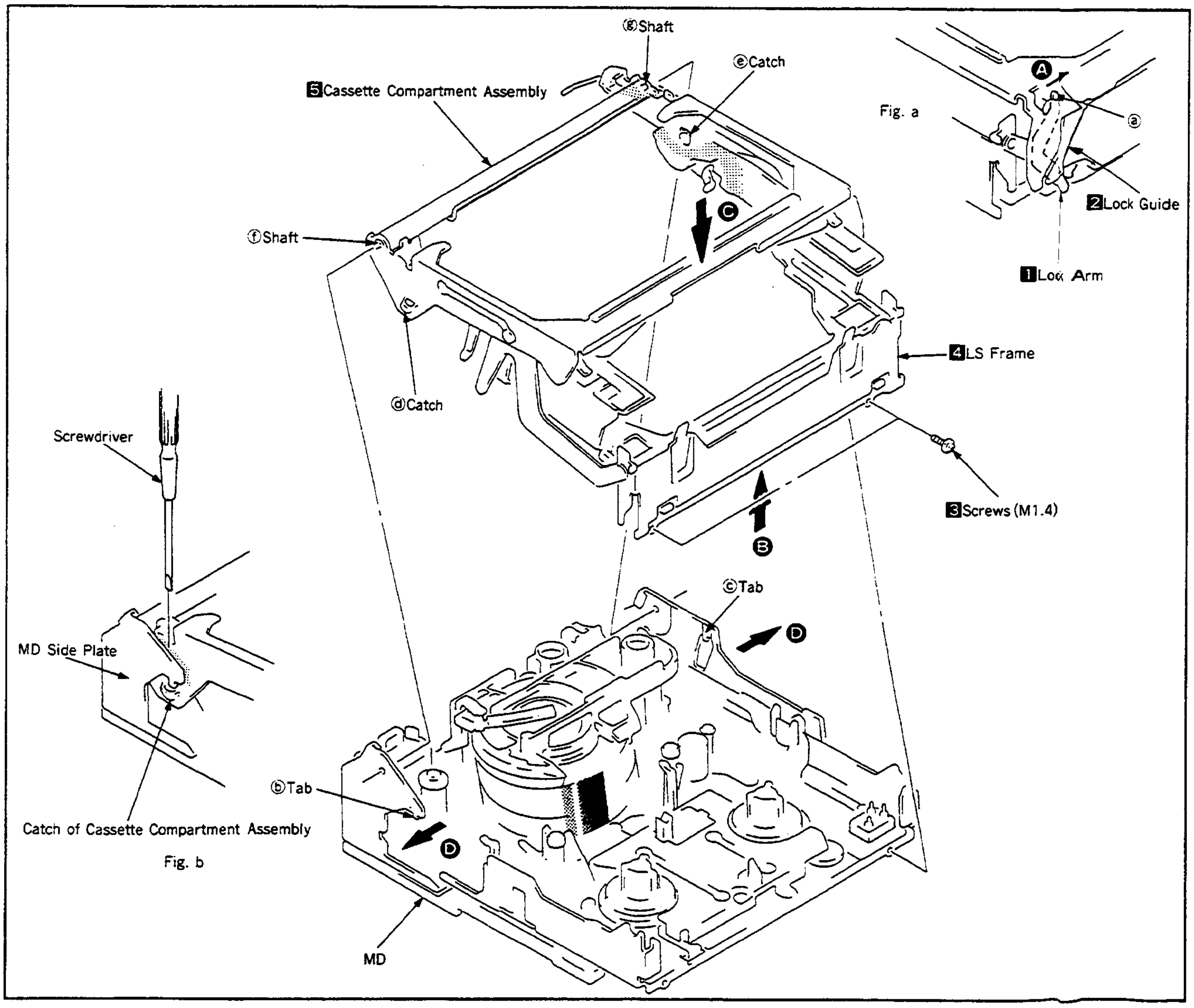

ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
Fig. a
🅐
ⓐ
❷Lock Guide
❶Lock Arm
🅒
ⓕShaft
❹LS Frame
ⓓCatch
Screwdriver
❸Screws (M1.4)
🅑
ⓒTab
🅓
MD Side Plate
ⓑTab
Catch of Cassette Compartment Assembly
Fig. b
🅓
MD

Fig. 1

## 2. Mounting (Fig. 2)

1) Select the USE mode.
2) Draw the cassette holder ❻ of cassette compartment assembly ❺ toward the arrow 🅔, and lower the LS frame ❹ toward the arrow 🅕.
3) With the cassette compartment assembly ❺ tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
   At this time, the part ⓙ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓛ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly ❺ so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm ❶ of cassette compartment assembly must be inserted into a groove in the guide rail ❼ on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame ❹ inside the LS chassis ❽.
6) Push down the cassette compartment to lock.

**Note :** Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws ❸.

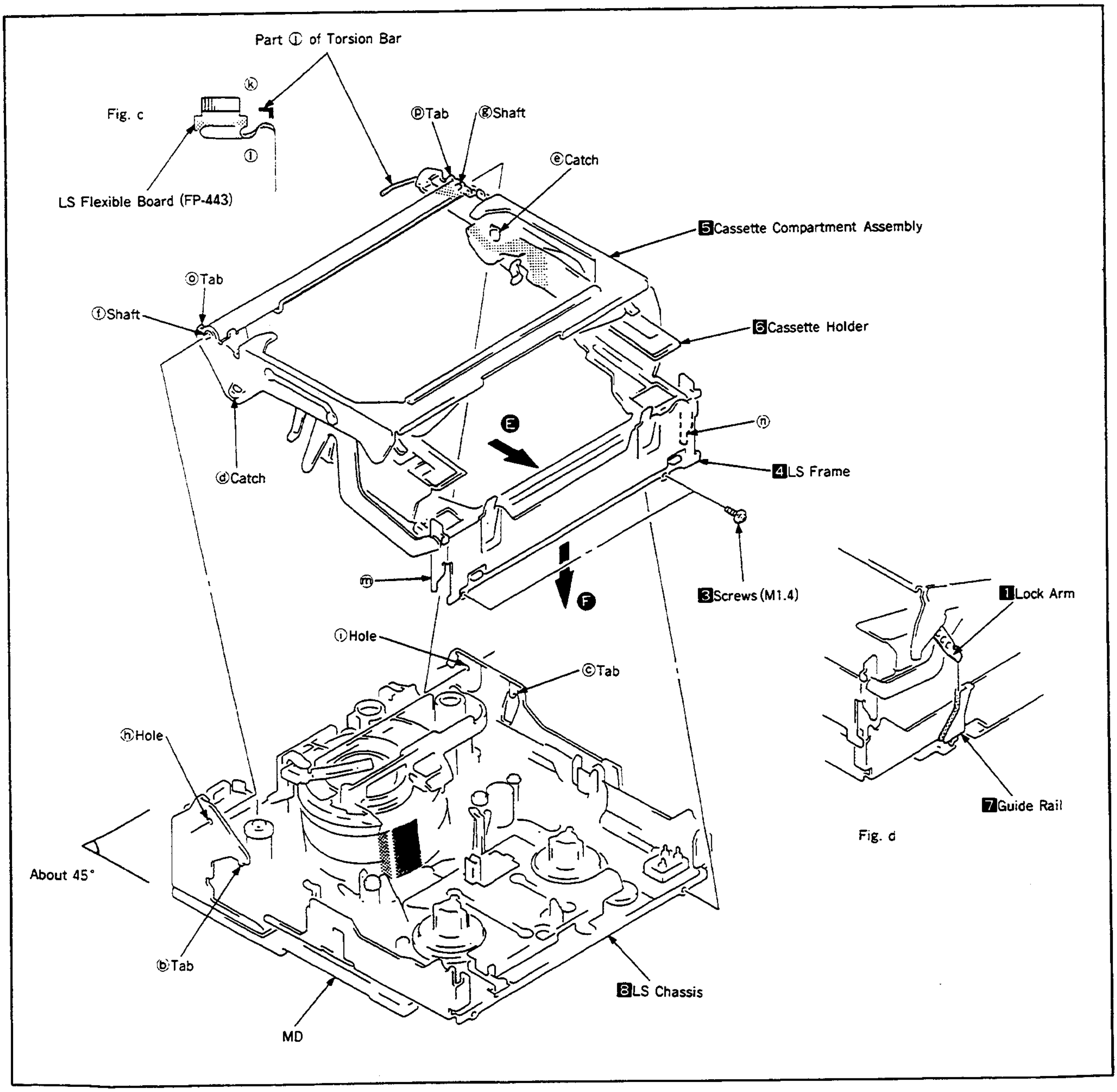

Part ⓙ of Torsion Bar
ⓚ
Fig. c
ⓛ
LS Flexible Board (FP-443)
ⓟTab
ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
ⓞTab
ⓕShaft
❻Cassette Holder
ⓓCatch
🅔
ⓝ
❹LS Frame
ⓜ
🅕
❸Screws (M1.4)
❶Lock Arm
ⓘHole
ⓒTab
ⓗHole
❼Guide Rail
Fig. d
About 45°
ⓑTab
❽LS Chassis
MD

Fig. 2

## 1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap ❷ on the Reflector C ❶.
3) Press the pin of the push switch ❸ (ON state) and fix it with adhesive tape ❹ in that state.

**Note** : Press the asterisked (*) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch ❺ in an arrow direction as shown in Fig. a.

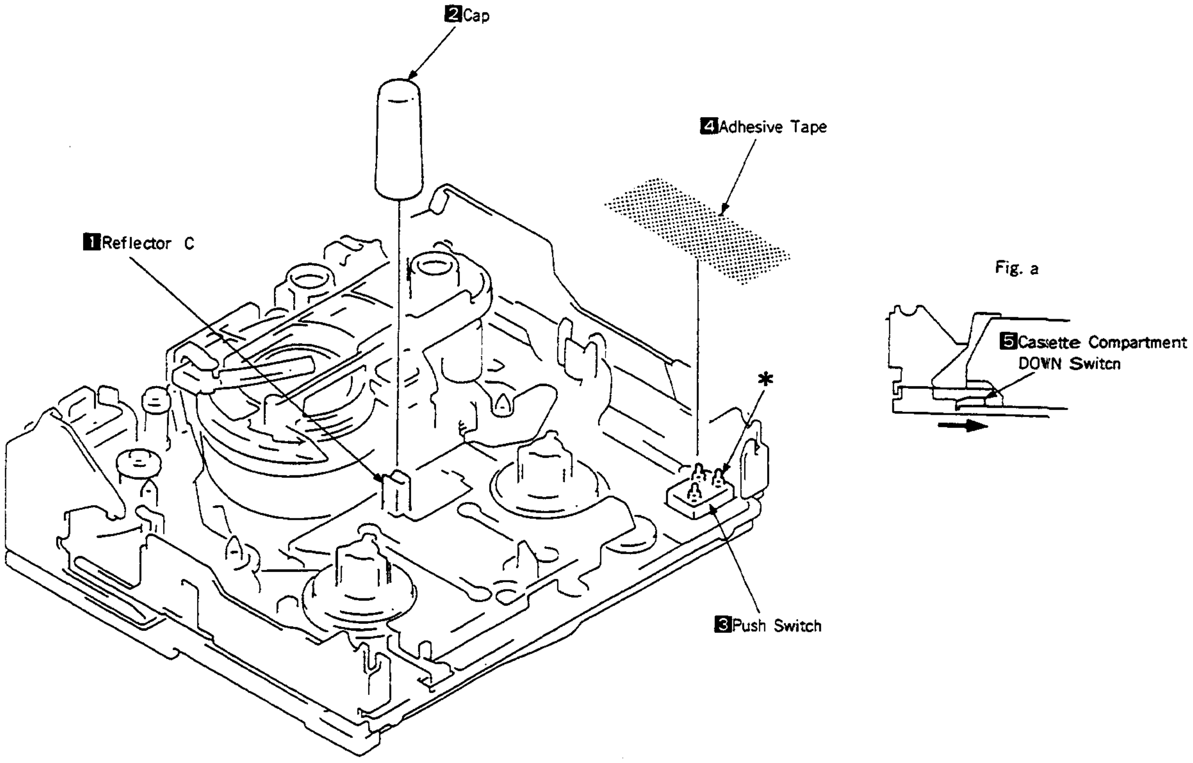

❷Cap
❹Adhesive Tape
❶Reflector C
Fig. a
❺Cassette Compartment DOWN Switch
*
❸Push Switch

Fig. 3

## 1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
  U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

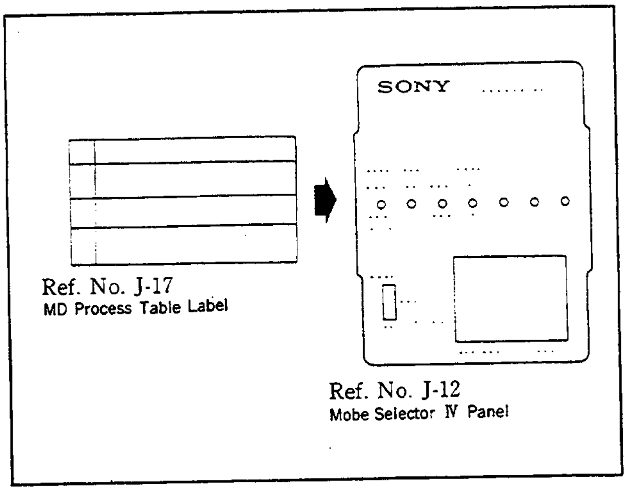

SONY
Ref. No. J-17
MD Process Table Label
Ref. No. J-12
Mobe Selector Ⅳ Panel

Fig. 4

1 Construction (Fig.5)

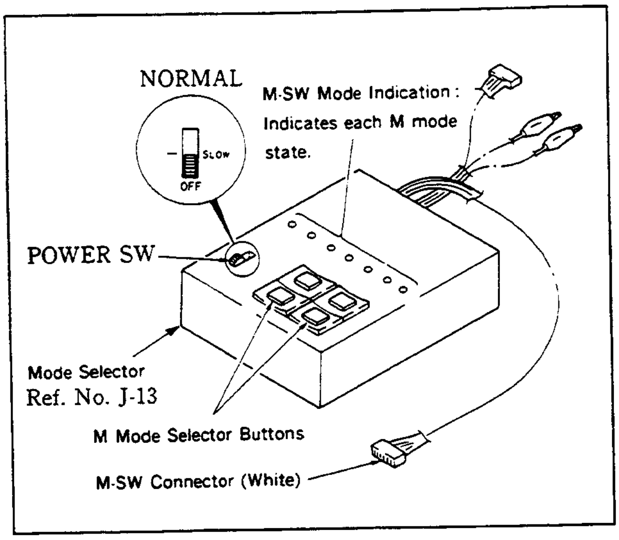

NORMAL
SLOW
OFF
M-SW Mode Indication : Indicates each M mode state.
POWER SW
Mode Selector
Ref. No. J-13
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector **1** and M-SW connector **2** into the mode selector IV conversion connector **3** respectively.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

For CCD-FX410 series

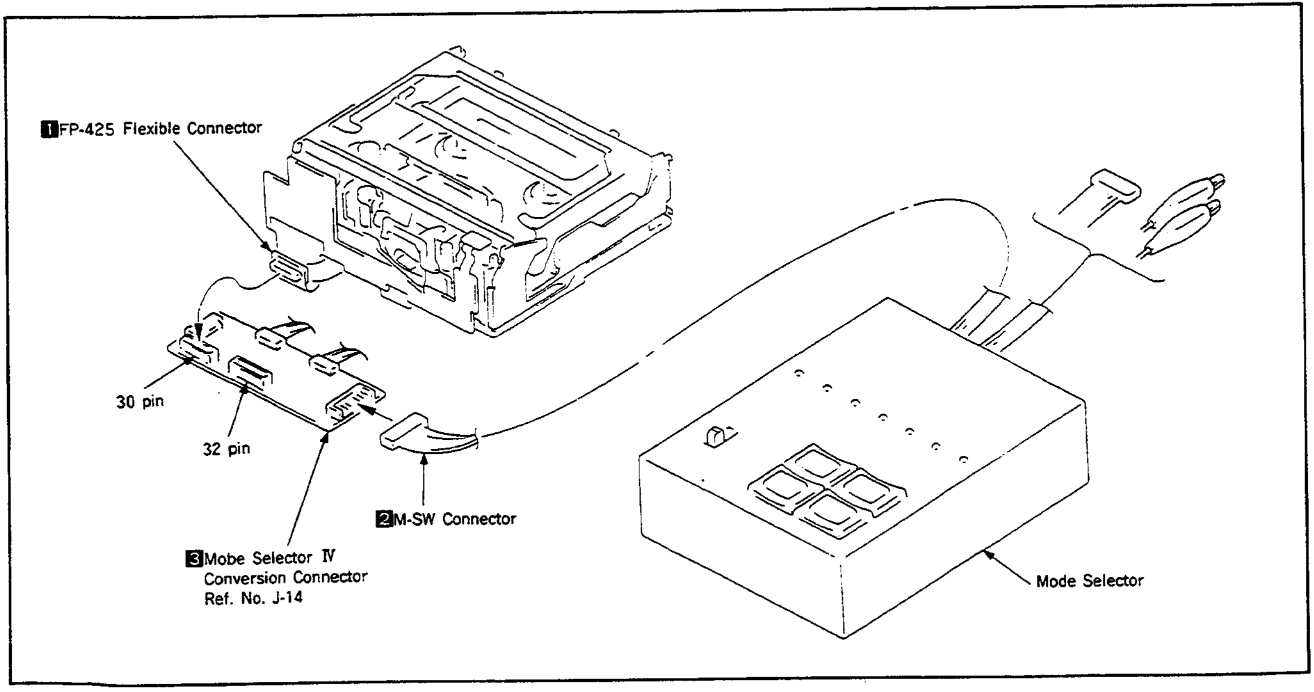
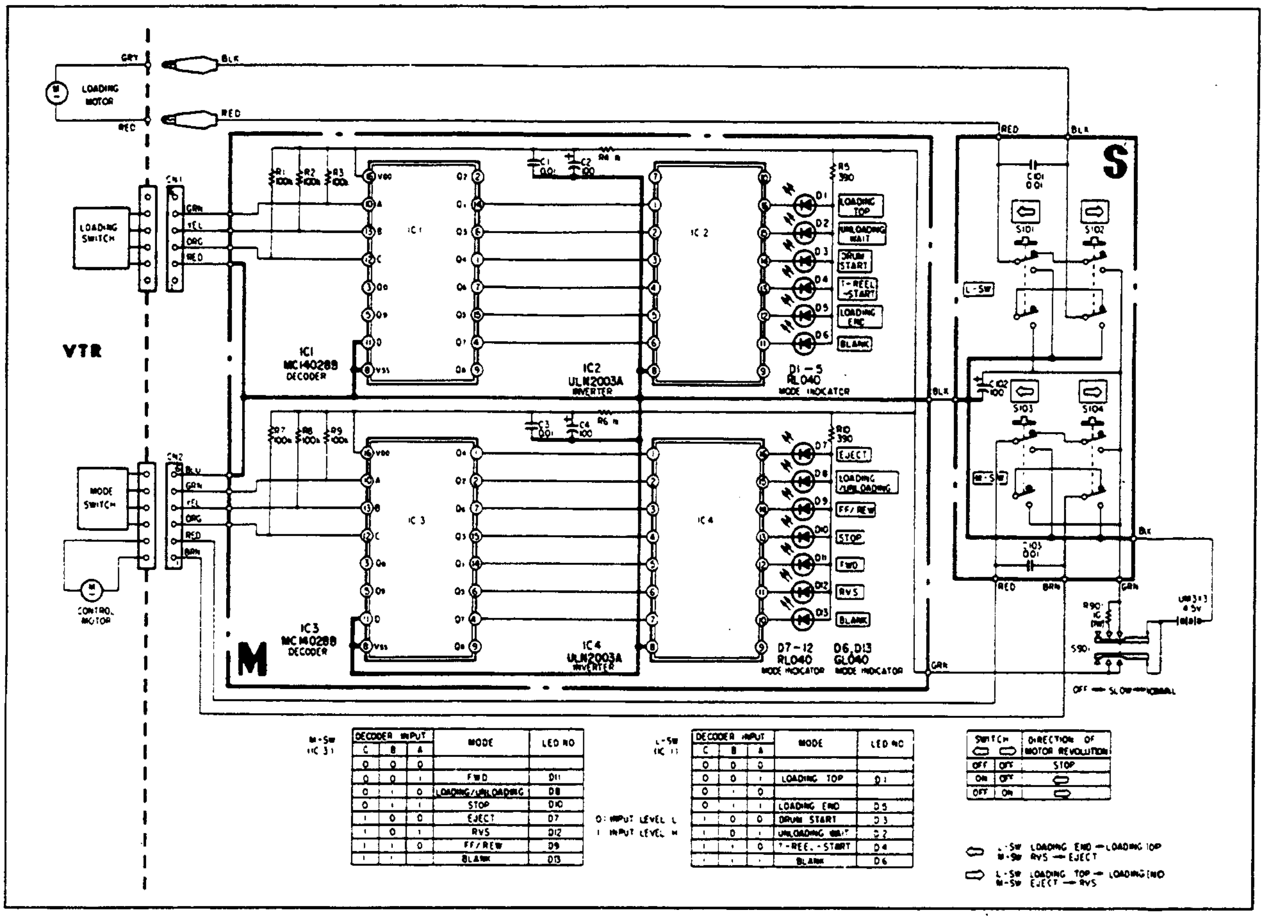

1 FP-425 Flexible Connector
30 pin
32 pin
2 M-SW Connector
3 Mobe Selector Ⅳ Conversion Connector Ref. No. J-14
Mode Selector

Fig. 6

## 1-4. MODE SELECTOR SCHEMATIC DIAGRAM



LOADING MOTOR
GRY
BLK
RED
LOADING SWITCH
MODE SWITCH
CONTROL MOTOR
VTR
CN1
CN2
IC1 MC14028B DECODER
IC2 ULN2003A INVERTER
IC3 MC14028B DECODER
IC4 ULN2003A INVERTER
D1-5 RL040 MODE INDICATOR
D7-12 RL040 MODE INDICATOR
D6, D13 GL040 MODE INDICATOR
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL START
LOADING END
BLANK
EJECT
LOADING /UNLOADING
FF/REW
STOP
FWD
RVS
S101
S102
S103
S104
L-SW
M-SW
S
M
OFF → SLOW → NORMAL

| M-SW (IC 3) DECODER INPUT C | B | A | MODE | LED NO |
|---|---|---|---|---|
| 0 | 0 | 0 | | |
| 0 | 0 | 1 | FWD | D11 |
| 0 | 1 | 0 | LOADING/UNLOADING | D8 |
| 0 | 1 | 1 | STOP | D10 |
| 1 | 0 | 0 | EJECT | D7 |
| 1 | 0 | 1 | RVS | D12 |
| 1 | 1 | 0 | FF/REW | D9 |
| 1 | 1 | 1 | BLANK | D13 |

0 : INPUT LEVEL L
1 : INPUT LEVEL H

| L-SW (IC 1) DECODER INPUT C | B | A | MODE | LED NO |
|---|---|---|---|---|
| 0 | 0 | 0 | | |
| 0 | 0 | 1 | LOADING TOP | D1 |
| 0 | 1 | 0 | | |
| 0 | 1 | 1 | LOADING END | D5 |
| 1 | 0 | 0 | DRUM START | D3 |
| 1 | 0 | 1 | UNLOADING WAIT | D2 |
| 1 | 1 | 0 | T-REEL-START | D4 |
| 1 | 1 | 1 | BLANK | D6 |

| SWITCH ⇦ | SWITCH ⇨ | DIRECTION OF MOTOR REVOLUTION |
|---|---|---|
| OFF | OFF | STOP |
| ON | OFF | ⇦ |
| OFF | ON | ⇨ |

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

## 1-5. MODE SELECTOR PARTS LIST

| Ref. No | Part No. | Description | | |
|---|---|---|---|---|
| | | CAPACITOR | | |
| C1 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| C2 | 1-123-333-00 | ELECT | 100$\mu$F | 24V |
| C3 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| C4 | 1-123-333-00 | ELECT | 100$\mu$F | 24V |
| C101 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| C102 | 1-123-333-00 | ELECT | 100$\mu$F | 24V |
| C103 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| | | DIODE | | |
| D1 | 8-719-812-31 | DIODE TLR123 | | |
| D2 | 8-719-812-31 | DIODE TLR123 | | |
| D3 | 8-719-812-31 | DIODE TLR123 | | |
| D4 | 8-719-812-31 | DIODE TLR123 | | |
| D5 | 8-719-812-31 | DIODE TLR123 | | |
| D6 | 8-719-812-33 | DIODE TLG123A | | |
| D7 | 8-719-812-31 | DIODE TLR123 | | |
| D8 | 8-719-812-31 | DIODE TLR123 | | |
| D9 | 8-719-812-31 | DIODE TLR123 | | |
| D10 | 8-719-812-31 | DIODE TLR123 | | |
| D11 | 8-719-812-31 | DIODE TLR123 | | |
| D12 | 8-719-812-31 | DIODE TLR123 | | |
| D13 | 8-719-812-33 | DIODE TLG123A | | |

| Ref. No | Part No. | Description | | |
|---|---|---|---|---|
| | | IC | | |
| IC1 | 8-752-240-28 | IC TC4028BP | | |
| IC2 | 8-752-120-03 | IC $\mu$PA2003C | | |
| IC3 | 8-759-240-28 | IC TC4028BP | | |
| IC4 | 8-759-120-03 | IC $\mu$PA2003C | | |
| | | RESISTOR | | |
| R1 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R2 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R3 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R4 | 1-247-131-00 | CARBON | 1K | 1/4W |
| R5 | 1-247-121-00 | CARBON | 390 | 1/4W |
| R6 | 1-247-131-00 | CARBON | 1K | 1/4W |
| R7 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R8 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R9 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R10 | 1-247-121-00 | CARBON | 390 | 1/4W |
| R901 | 1-214-594-00 | METAL | 10 | 1W |

## 2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

### 2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

**Note** : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

### 2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the USE mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

**Note** : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

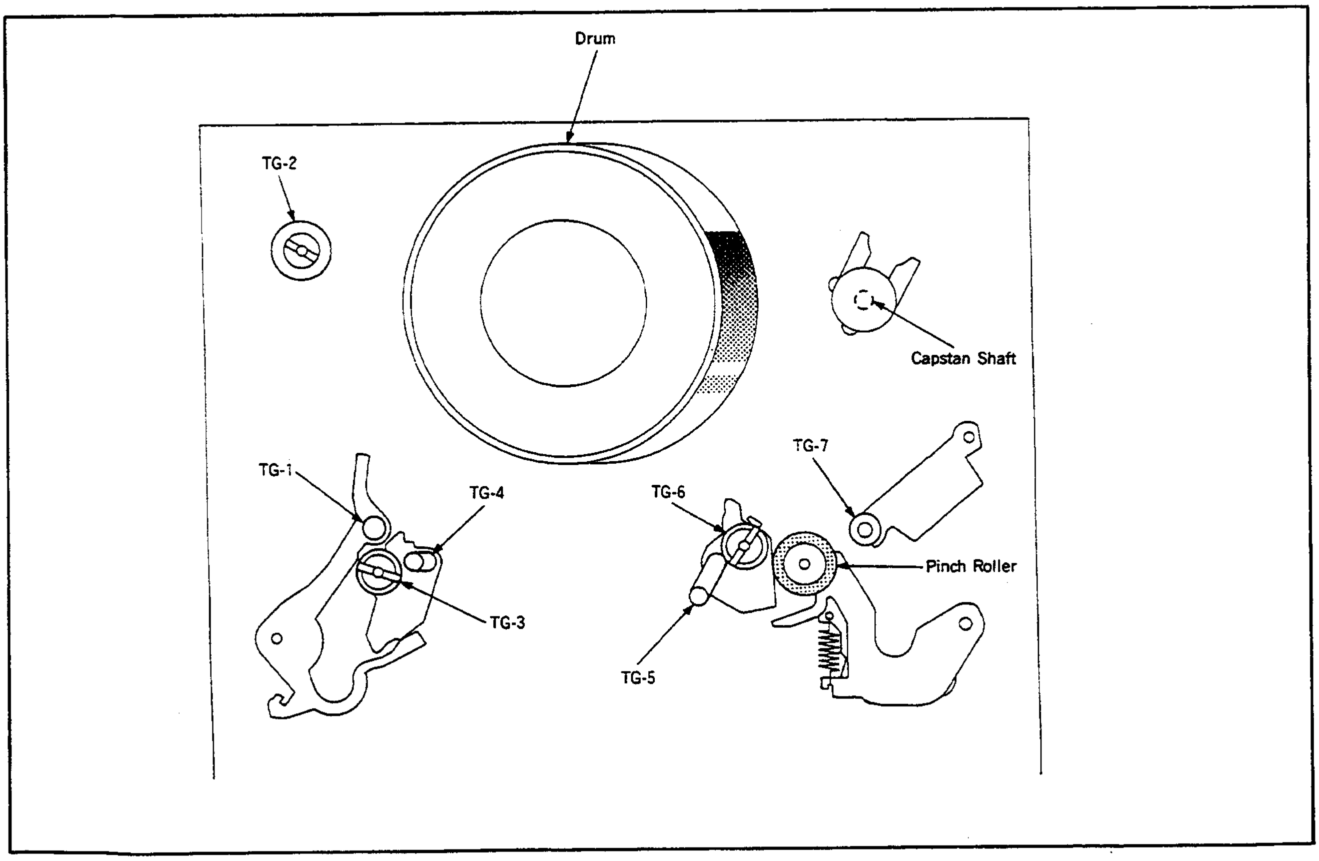


Fig. 7

## 2-3. PERILDIC CHECK ITEMS

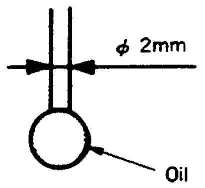
| | Location of Maintenance and check | Hours of Use (H) | | | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | |
| Tape trans-portion System | Cleaning of tape path surface | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Be careful of oil |
| | Cleaning and degaussing of rotary assembly | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Be careful of oil |
| Driving System | Relay belt | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | 3-944-539-01 |
| | Capstan shaft | — | ◎ | — | ◎ | — | ◎ | — | ◎ | — | ◎ | Be adsolutely careful not to get oil on the tape path surface. |
| | Relay pulley shaft | — | ◎ | — | ◎ | — | ◎ | — | ◎ | — | ◎ | |
| | Loading motor | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | A-7040-304-A |
| Performance Confirmation | Abnormal noise | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | |
| | Back tension measurement | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |
| | Brake system | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |
| | FWD. RVS torque measurement | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |

○ : Cleaning ◎ : Oil ☆ : Confirmation

**Note :** When overhauling, refer to the items above to replace parts.

**Note :** Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

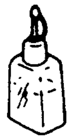


## 2-4. Service jigs list

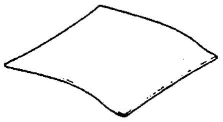
| Ref. No. | Name | Part No. | Fixture No. | Usage and Others |
|---|---|---|---|---|
| J-1 | Cleaning fluid | Y-2031-001-0 | | |
| J-2 | Chamois cloth | 2-034-697-00 | | |
| J-3 | Super fine applicator<br>(Made by NIPPON APPLICATOR, P752D) | | | |
| J-4 | Head degausser | Widely available | | |
| J-5 | Small mirror for adjustment<br>Spare mirror | J-6080-029-A<br>J-6080-030-1 | SL-5052 | Tape path |
| J-6 | Alignment tape NTSC (WR5-1N)<br>PAL (WR5-1C) | 8-967-995-01<br>8-967-995-06 | | Tape path |
| J-9 | FWD and RVS winding torque cassette | J-6080-824-A | GD-2086 | |
| J-10 | Rotary drum jig | (Attached to the maintenance rotary upper drum) | | |
| J-11 | Screwdriver for tape path | J-6082-026-A | | For tape guide adjustment |
| J-12 | Mode selector Ⅳ panel | J-6082-105-A | | |
| J-13 | Mode selector | J-6080-825-A | | For all models |
| J-14 | Mode selector Ⅳ conversion connector | J-6082-167-A | | |
| J-15 | FWD B.T. adjusting driver | J-6082-182-A | | |
| J-16 | Adjusting remote controller | J-6082-053-B | | Tape path (Setting of PATH mode) |
| J-17 | MD process table label | J-6082-166-A | | |

Other equipment
- Oscilloscope
- Analog tester (20 kΩ)

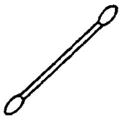
J-1



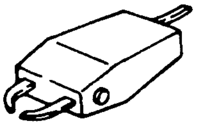
J-2



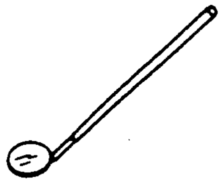
J-3



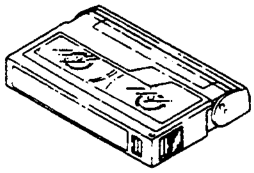
J-4



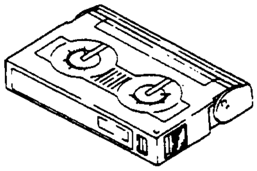
J-5



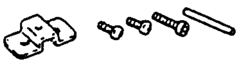
J-6



J-9

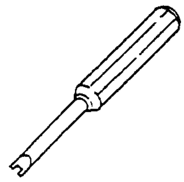


J-10

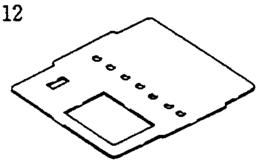


(Attached to the maintenance rotary upper drum)

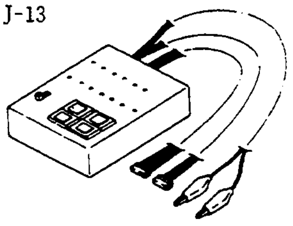
J-11



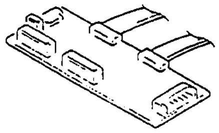
J-12



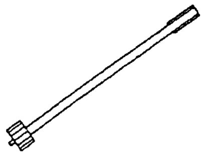
J-13



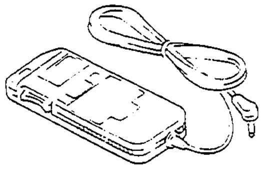
J-14



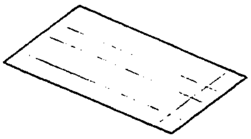
J-15



J-16



J-17



## 3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

**Note** : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

**Note** : The modes in ☐ are those set by pressing the mode selector buttons.

### 3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw ❶.
3) Remove the Retainer, Gooseneck assembly ❷.

2. Mounting

1) Mount the Retainer, Gooseneck assembly ❷ with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

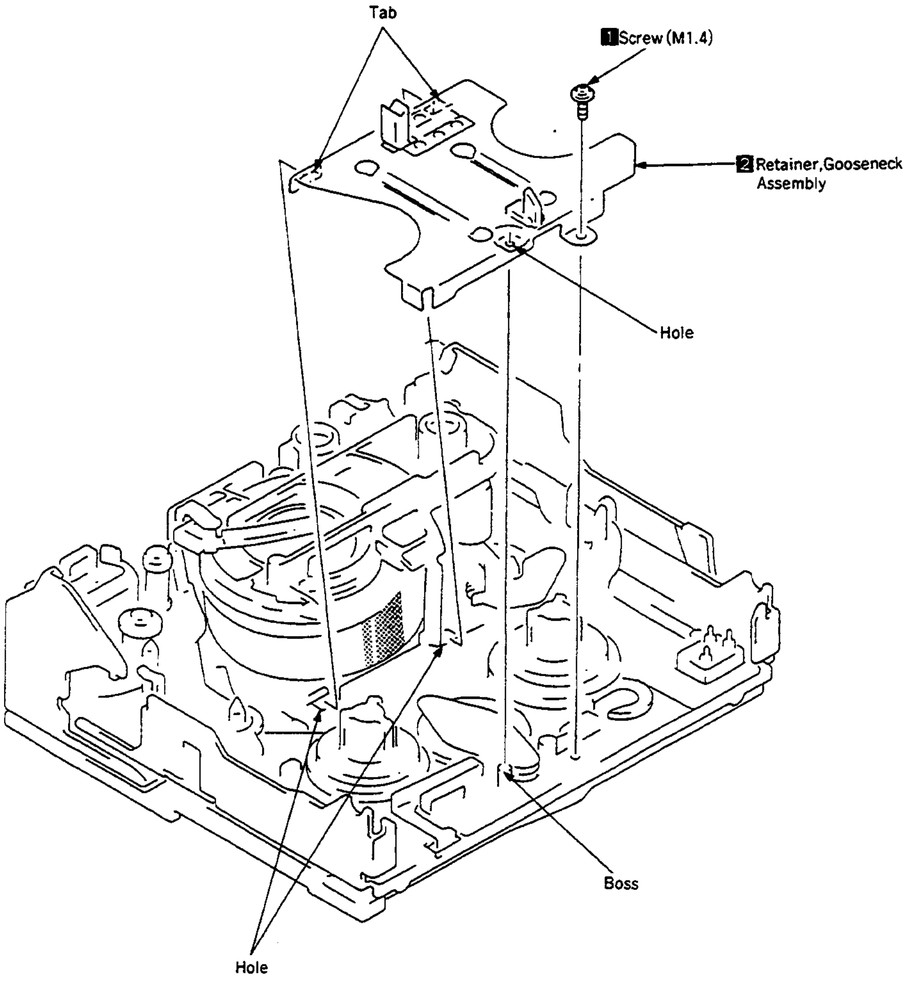


Fig. 8

## 3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws **1**, then the protector base assembly **2**.

### 2. Mounting

1) Mount the protector base assembly **2** with its three hole engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder **3**.
2) Tighten two screws **1**.
3) Referring to 1-1, mount the cassette compartment assembly.

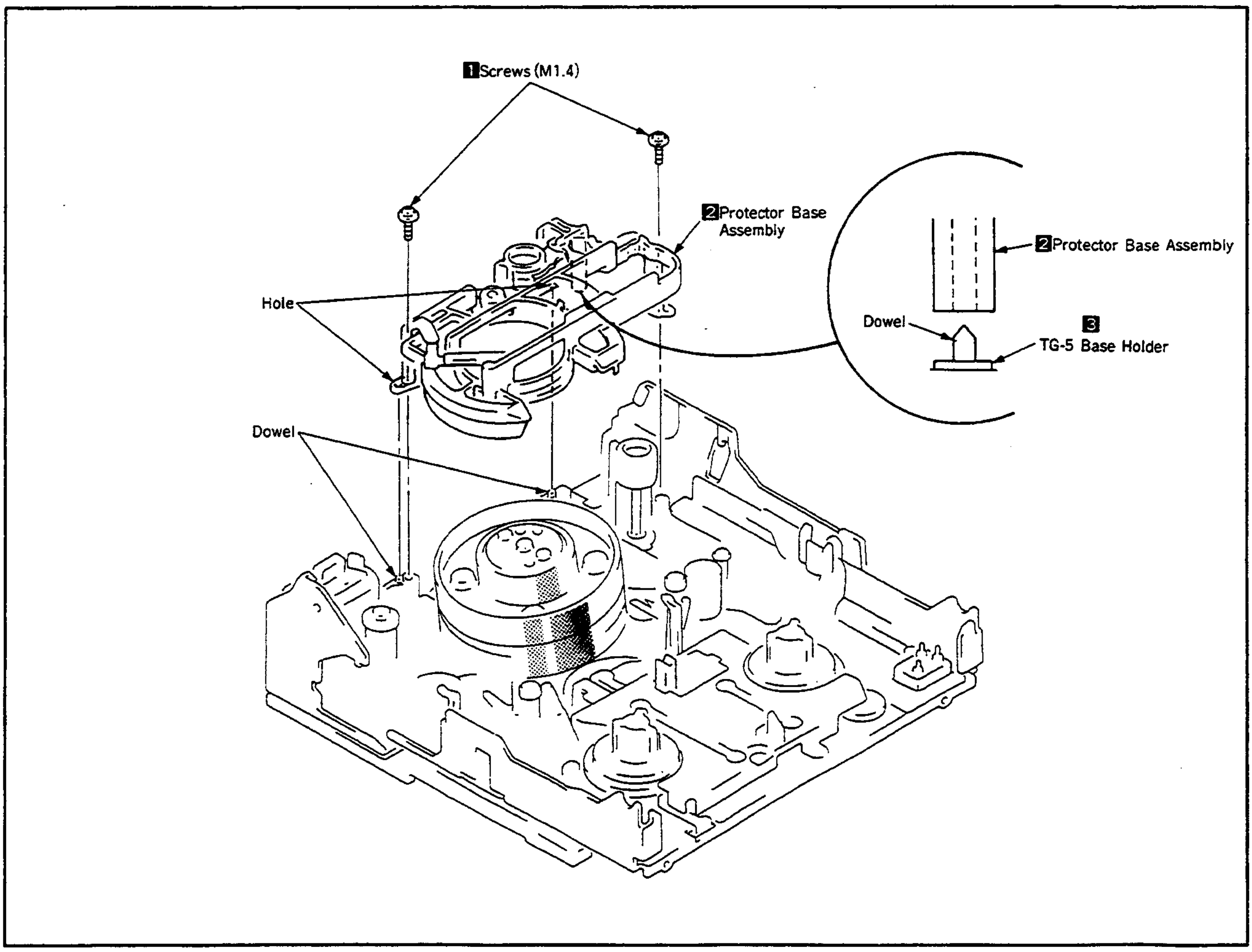

1 Screws (M1.4)
2 Protector Base Assembly
Hole
Dowel
Dowel
2 Protector Base Assembly
3 TG-5 Base Holder

Fig. 9

## 3-3. DRUM ASSEMBLY (Fig. 10)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board 1 on the back of MD.
4) Remove three screw 2, then the drum assembly 3.

**Note** : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

### 2. Mounting

1) Mount the drum assembly 3 while aligning with two dowels ⓐ of chassis.

**Note** : Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2) Tighten three screw assemblies 2 in the order of 1, 2 and 3.

**Note** : Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

**Note** : In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board 1 on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

**Note** : After mounting, make tape path adjustment in Section 4.

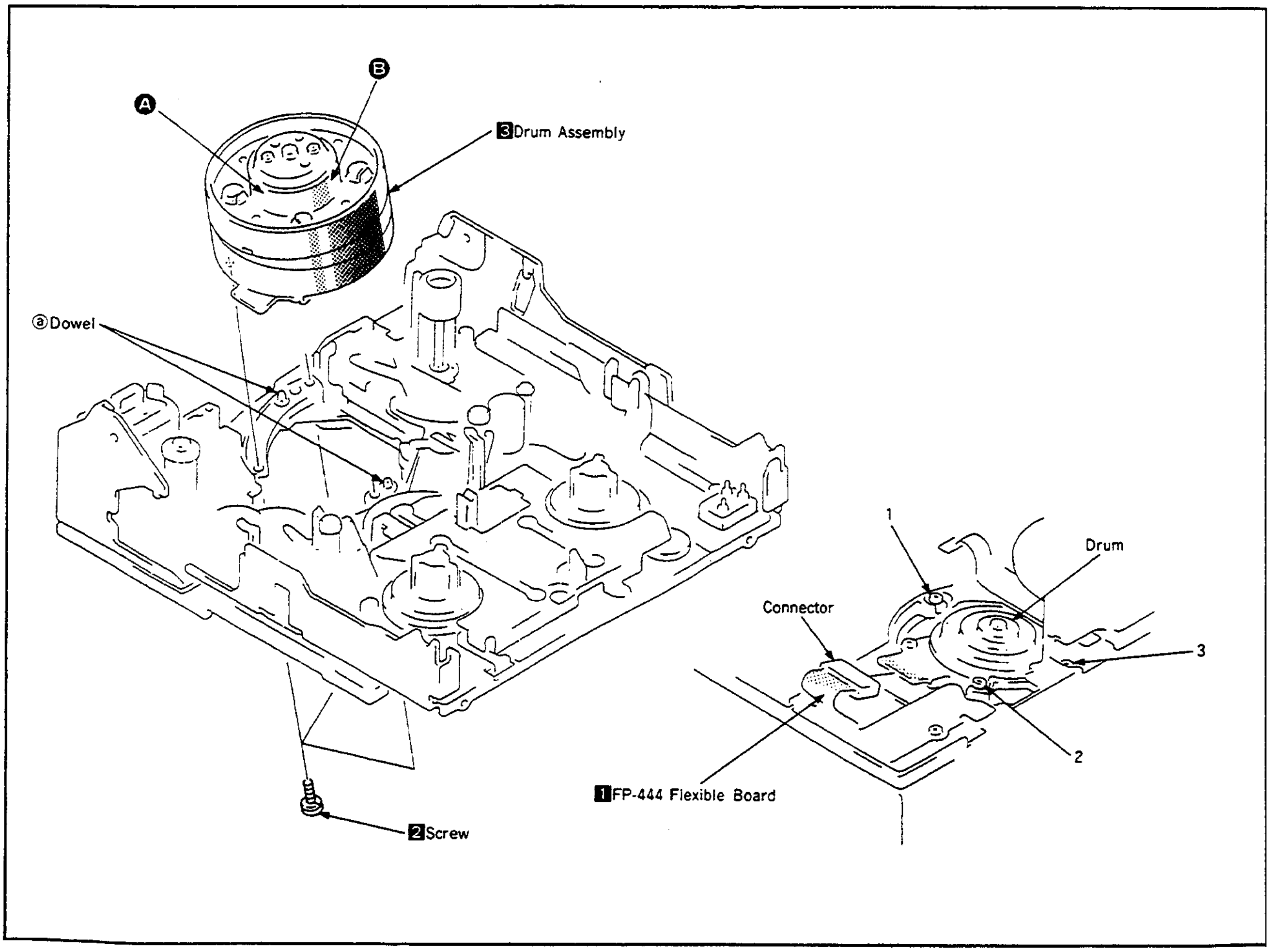


Fig. 10

## 3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw 1, then the capstan cover 2.
3) Remove the screw 3, then the capstan motor assembly 4.

### 2. Mounting

1) Mount the capstan motor assembly 4 and tighten the scre 3.

**Note :** In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover 2 and tighten two screws 1.
3) Referring to 1-1, mount the cassette compartment assembly.

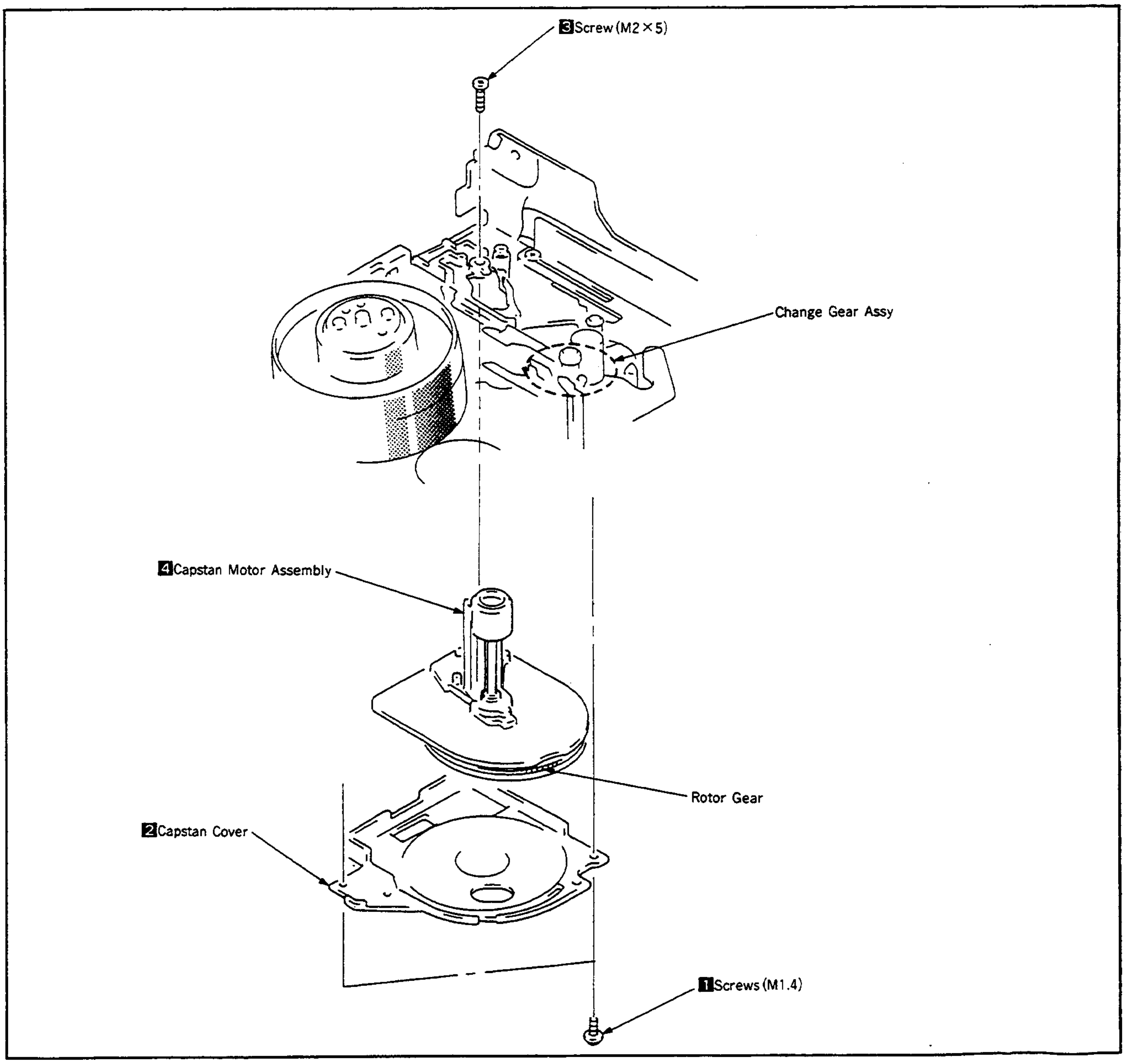

3 Screw (M2 × 5)
Change Gear Assy
4 Capstan Motor Assembly
Rotor Gear
2 Capstan Cover
1 Screws (M1.4)

Fig. 11

## 3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly **1**.
4) Remove the T soft assembly **2**, then the T soft arm **3**.

### 2. Mounting

1) Mount the T soft arm **3** with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly **2** with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly **1** and rotate it toward the arrow 🅐 to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

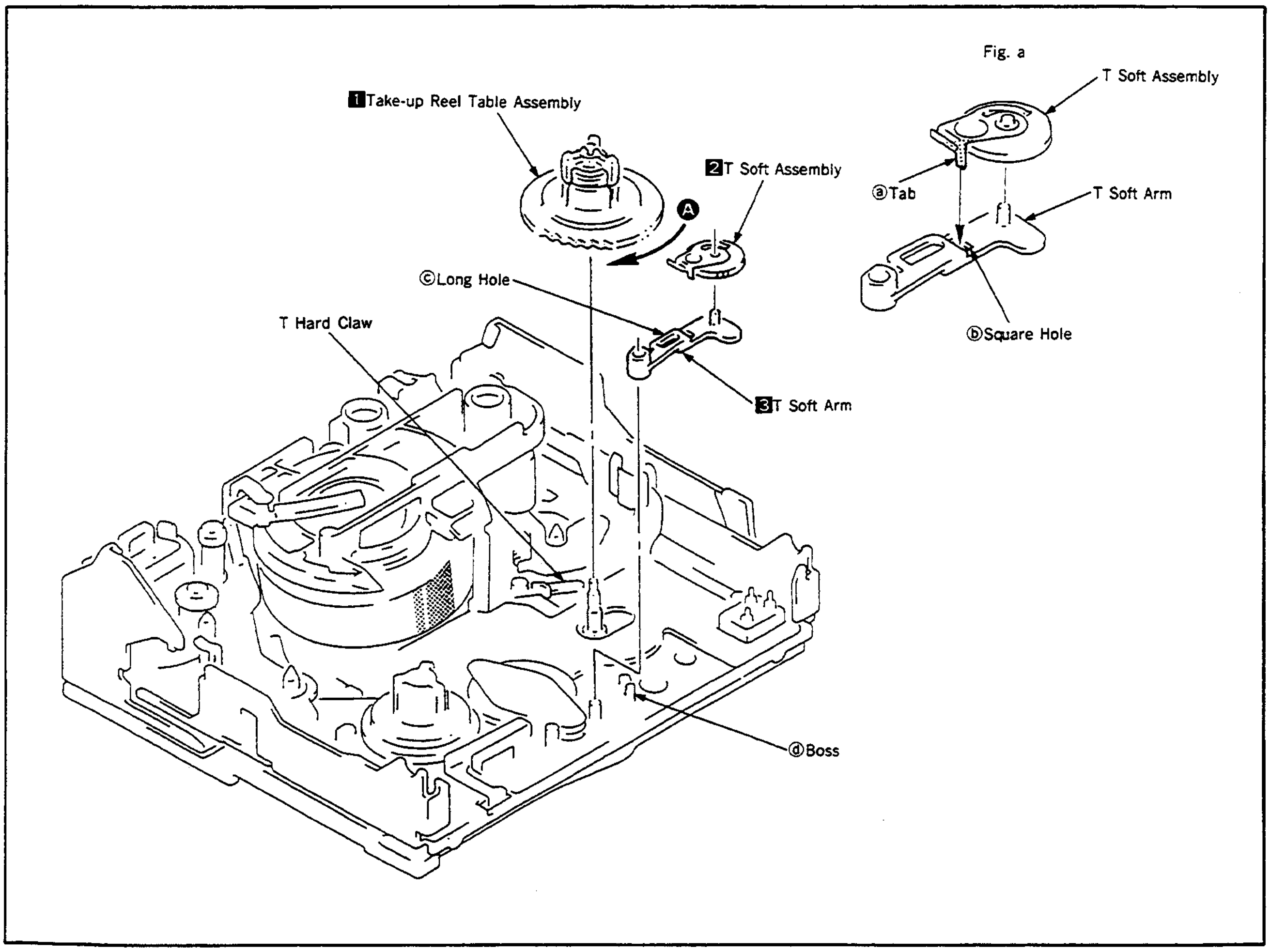


Fig. a
T Soft Assembly
ⓐTab
T Soft Arm
ⓑSquare Hole
1 Take-up Reel Table Assembly
2 T Soft Assembly
🅐
ⓒLong Hole
T Hard Claw
3 T Soft Arm
ⓓBoss

Fig. 12

## 3-6. PINCH ARM ASSEMBLY (Fig. 13)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the [READY] mode.
3) Remove a washer ❶, then the pinch arm assembly ❷.

### 2. Mounting

1) Select the [READY] mode.
2) Hooking a spring of pinch arm assembly ❷ to the casse positioning boss on the chassis, mount the pinch arm assembly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer ❶.
5) Referring to 1-1, mount the cassette compartment assembly.

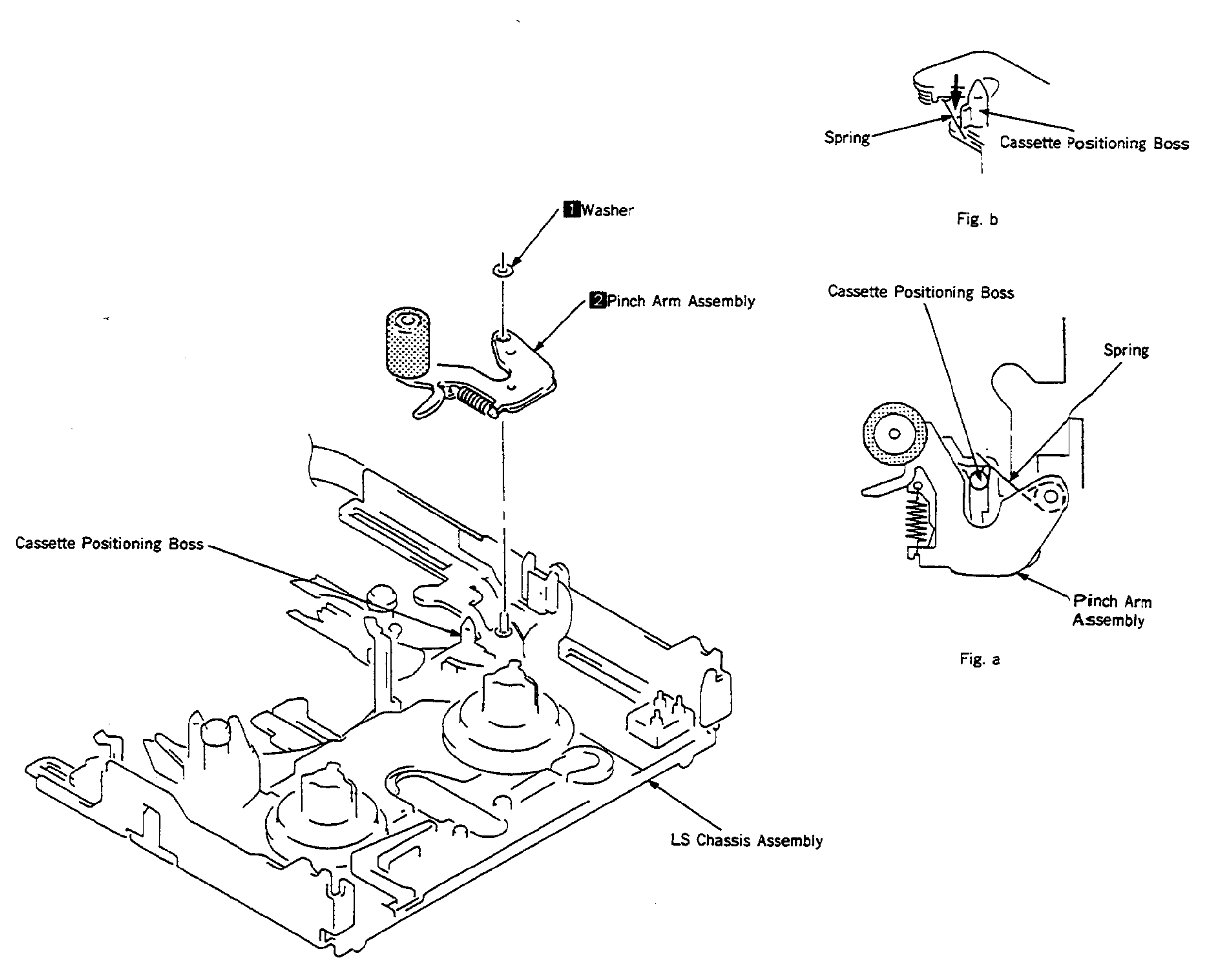

Spring
Cassette Positioning Boss
❶Washer
❷Pinch Arm Assembly
Cassette Positioning Boss
Spring
Cassette Positioning Boss
Pinch Arm Assembly
LS Chassis Assembly

Fig. b

Fig. a

Fig. 13

## LS CHASSIS ASSEMBLY (Fig. 14)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw 1, TG-5 base holder 2, and LS flexible board 3.
5) Remove a lock washer 4, then the gooseneck as sembly 5.
6) Remove four screws 6, then the LS chassis assembly 7.

### 2. Mounting

1) Select the USE mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly 7 on the chassis.

**Note** : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws 6.
6) Mount the LS flexible board 3 and TG-5 base holder 2,then tighten the screw 1.
7) Mount the Gooseneck assembly 5 and fix it with a washer 4.

**Note** : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.

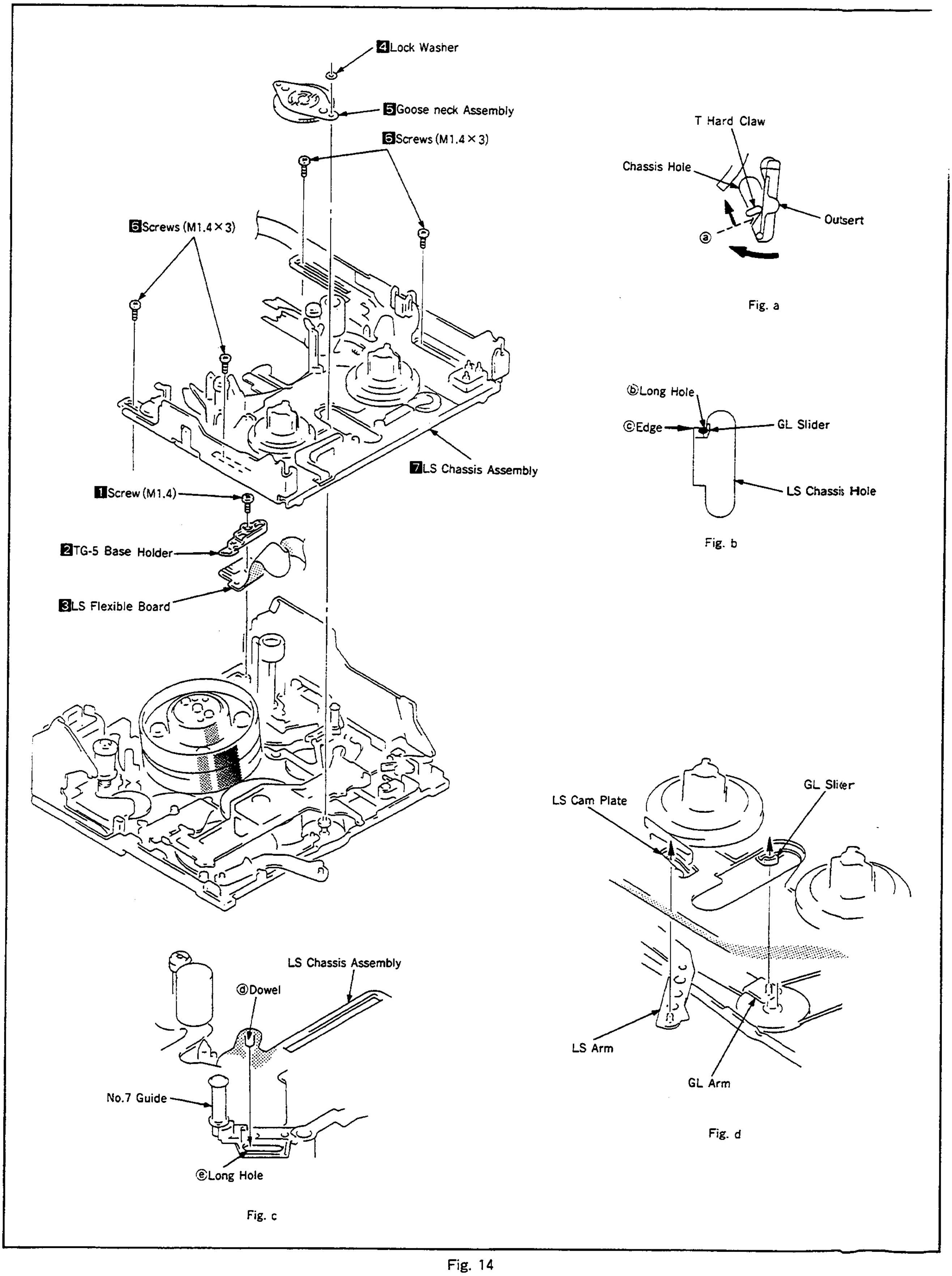

4 Lock Washer
5 Goose neck Assembly
6 Screws (M1.4×3)
6 Screws (M1.4×3)
7 LS Chassis Assembly
1 Screw (M1.4)
2 TG-5 Base Holder
3 LS Flexible Board
T Hard Claw
Chassis Hole
Outsert
ⓐ
ⓑ Long Hole
ⓒ Edge
GL Slider
LS Chassis Hole
LS Chassis Assembly
ⓓ Dowel
No.7 Guide
ⓔ Long Hole
LS Cam Plate
GL Slider
LS Arm
GL Arm

Fig. a

Fig. b

Fig. c

Fig. d

Fig. 14

## 3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider ❶ toward the arrow 🅐, and remove the guide base T assembly ❷ and guide base S assembly ❸ from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly ❷ and guide base S assembly ❸ respectively, align the shaft to hole to remove as shown in Fig. a.

### 2. Mounting

1) Turning the guide base T assembly ❷ and guide base S assembly ❸ respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly ❹, guide arm S assembly ❺ and GL slider ❶ from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly ❷ and guide base S assembly ❸ with the respective guide rails, push in the GL slider ❶ toward the arrow 🅑 as shown in Fig. 16.

**Note :** Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

**Note :** At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

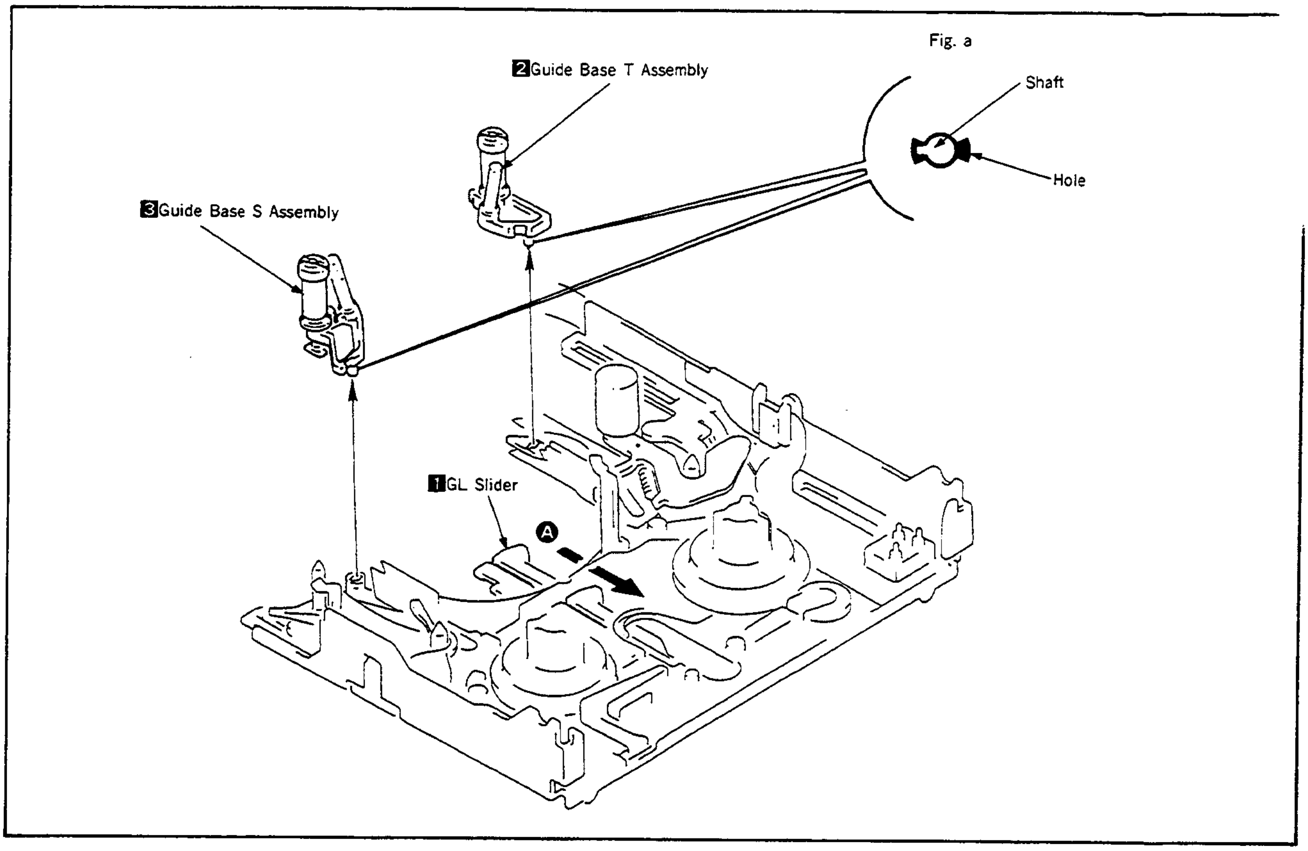


Fig. a
2 Guide Base T Assembly
Shaft
Hole
3 Guide Base S Assembly
1 GL Slider
A

Fig. 15

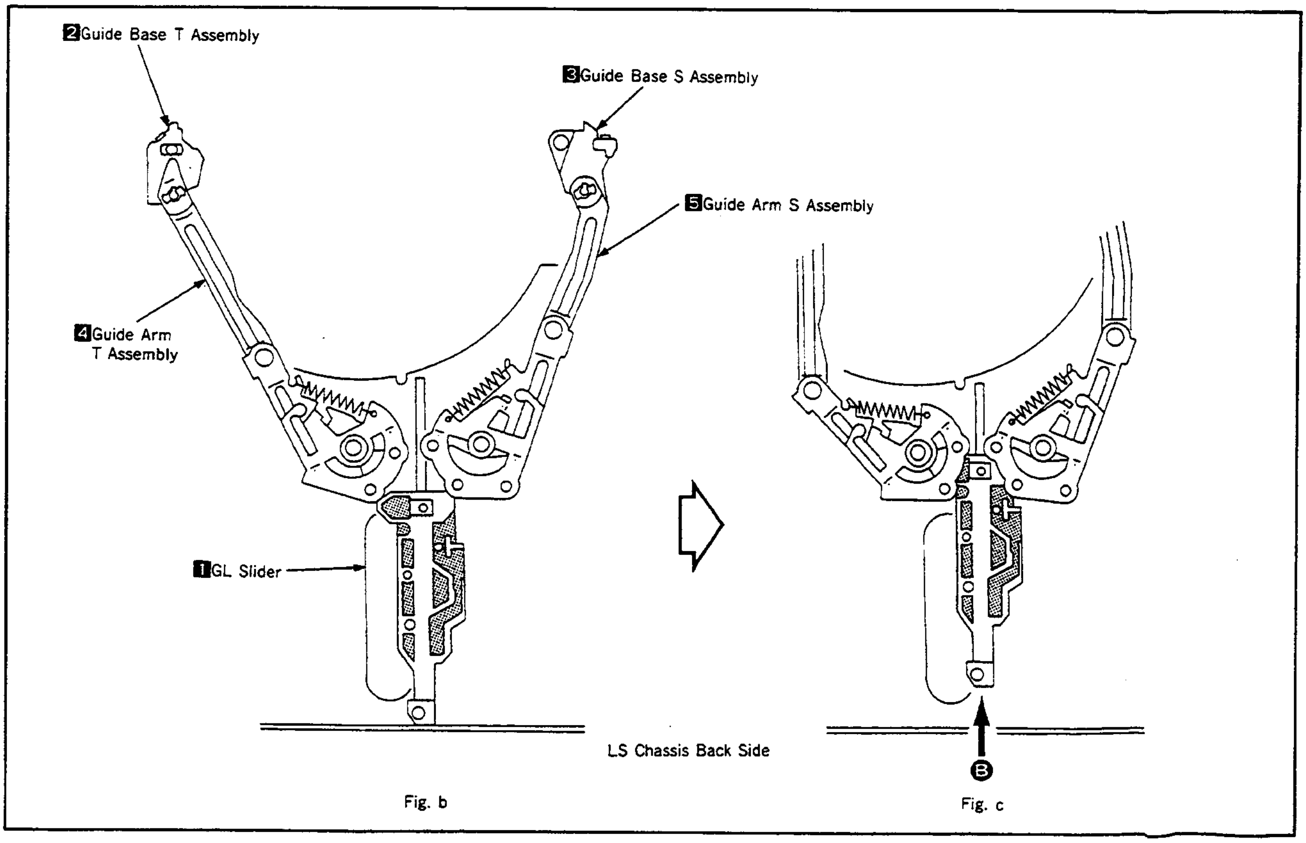

2 Guide Base T Assembly
3 Guide Base S Assembly
5 Guide Arm S Assembly
4 Guide Arm T Assembly
1 GL Slider
LS Chassis Back Side
B

Fig. b

Fig. c

Fig. 16

## 3 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers ❶, then the guide arm T assembly ❷ and guide arm S assembly ❸ respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

### 2. Mounting

1) Mount the guide arm T assembly ❷ and guide arm S assembly ❸, then fix them with a lock washer ❶ respectively.

**Note :** Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

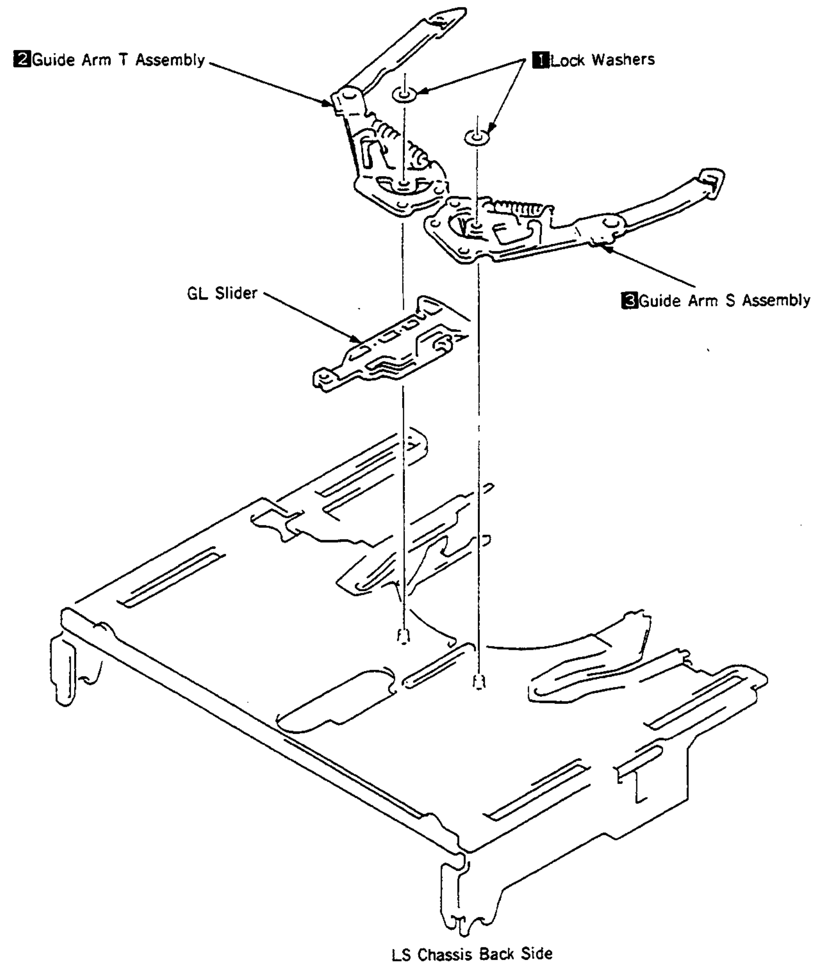


Fig. 17

## 3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw ❶, then the string ❷ from the supply reel table assembly ❸. For easy removal of string block ❹, insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly ❸.
8) Remove a tension coil spring ❺.
9) Turn the TG-1 arm assembly ❻ up to a portion ⓒ of LS chassis hole in the arrow Ⓐ direction so that its tab ⓑ can be disengaged (Fig. b).

### 2. Mounting

1) Pushing the S soft brake ❼ toward the arrow Ⓑ, mount thesupply reel table assembly ❸.
2) Route the string ❷ under the TG-1 arm asembly ❻, andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ⓒ, then turn the TG-1 arm assembly in the reverse direction of arow Ⓐ (Fig. b).
3) Wind the string ❷ along the groove of supply reel t assembly ❸ (Fig. a).

**Note :** Do not curl the string extremely. Also, avoid adhesion oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block ❹ toward the arrow Ⓒ and tighten the screw ❶ (Fig. a).
5) Engage the tension coil spring ❺ to the chassis hook.

**Note :** Confirm that the string ❷ is surely wound around the groove of supply reel table assembly ❸ (Fig.a).

6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

**Note :** At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

**Note :** Referring to 3-22, adjust the tension regulator position.

**Note :** Referring to 3-23, adjust the forward back tension.

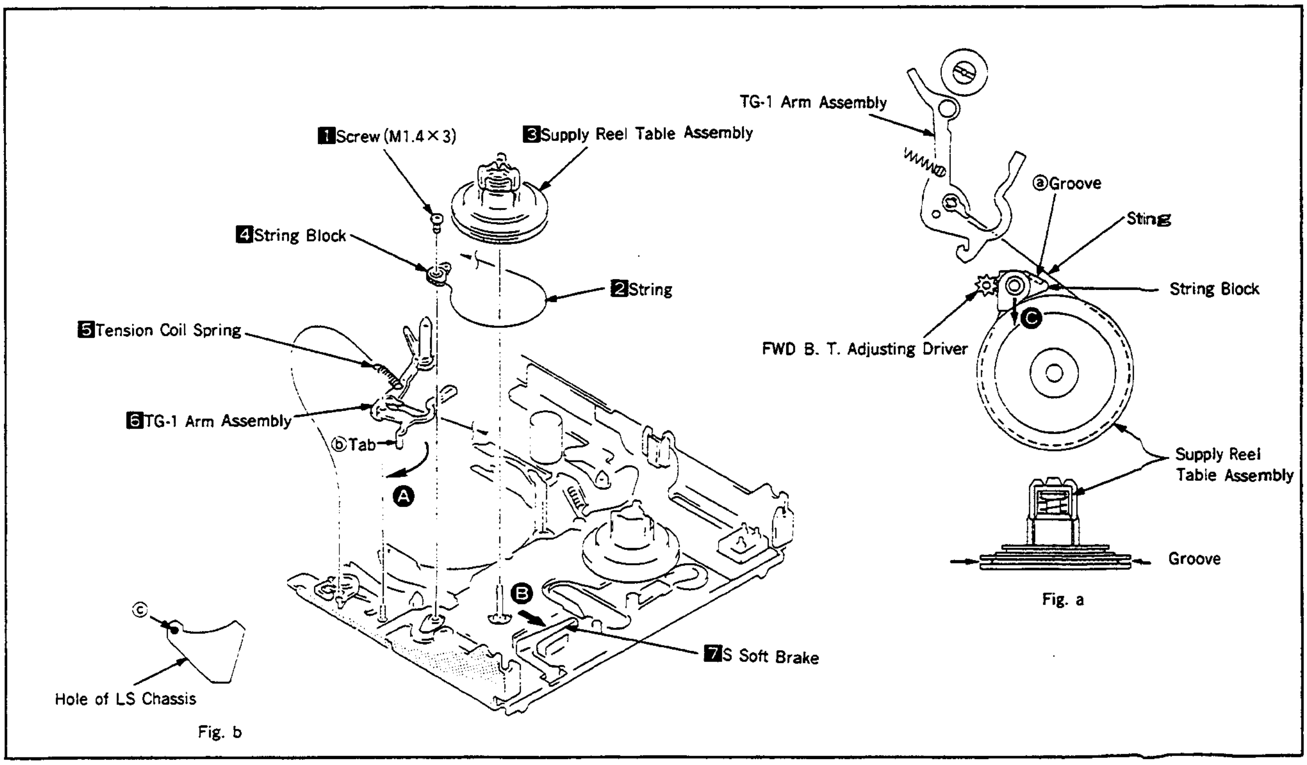

❶Screw (M1.4 × 3)
❸Supply Reel Table Assembly
❹String Block
❷String
❺Tension Coil Spring
❻TG-1 Arm Assembly
ⓑTab
Ⓐ
Ⓑ
❼S Soft Brake
ⓒ
Hole of LS Chassis
TG-1 Arm Assembly
ⓐGroove
Sting
String Block
Ⓒ
FWD B. T. Adjusting Driver
Supply Reel Table Assembly
Groove

Fig. b

Fig. a

Fig. 18

## 3 . TG-2 ROLLER ASSEMBLY (Fig. 19)

### 1. Removal

1) Remove the TG-2 roller assembly 1 .
2) Remove a compression coil spring 2 .

### 2.Mounting

1) Insert a compression coil spring 2 into the boss on chassis.
2) Rotate gently the TG-2 roller assembly 1 until the screw is engaged.

### 3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

**Note** : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

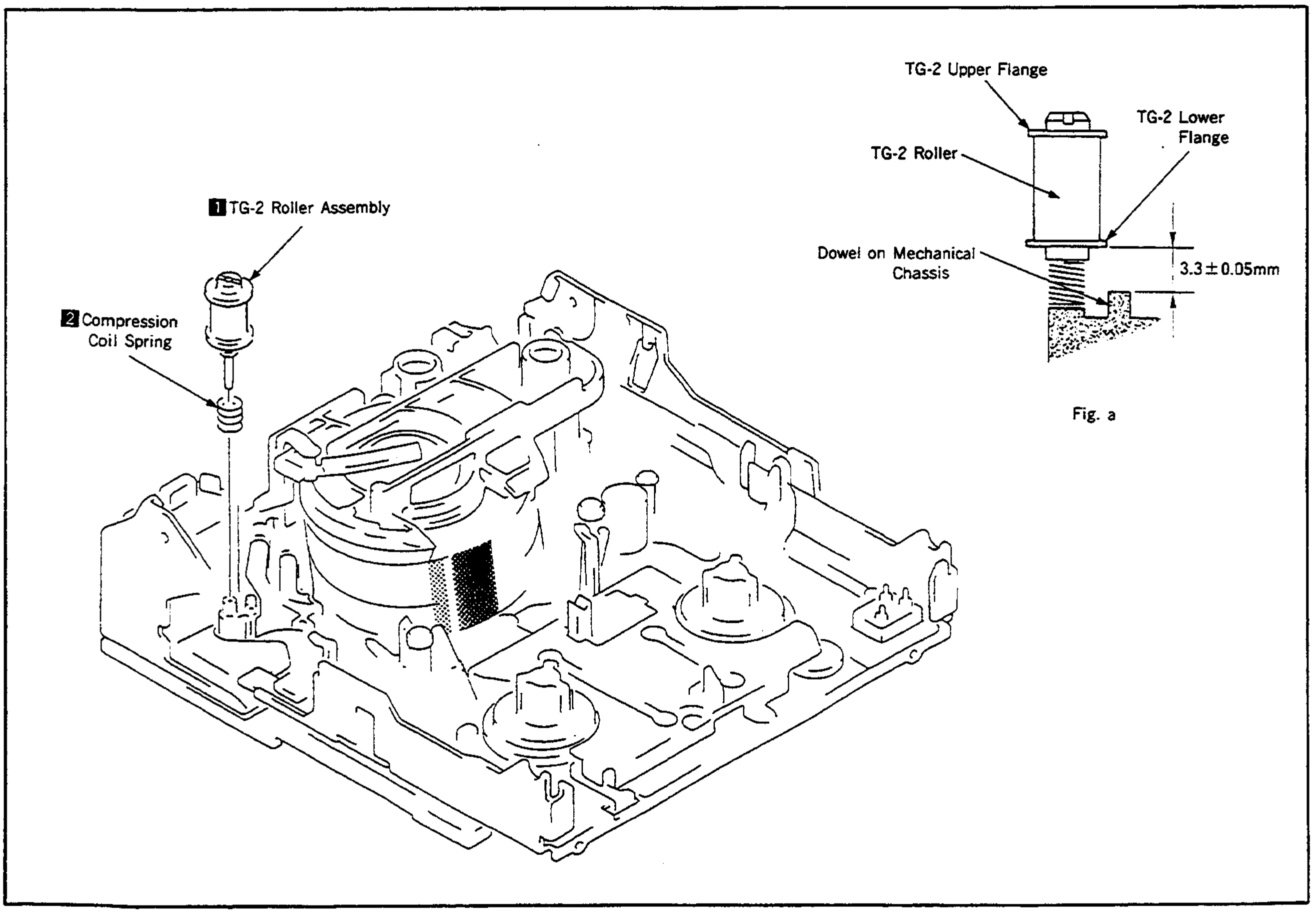

TG-2 Upper Flange
TG-2 Lower Flange
TG-2 Roller
Dowel on Mechanical Chassis
3.3±0.05mm
Fig. a
1 TG-2 Roller Assembly
2 Compression Coil Spring

Fig. 19

### 3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring ❶ in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly ❷ from the shaft of mechanical-chassis.

2. Mounting

1) Mount the TG-7 arm assembly ❷ to the shaft of mechanic chassis.
2) Mount the TG-7 arm Leaf spring ❶ to the mechanicalchasis.
   * Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

**Note** : After mounting, perform 4. TAPE PATH ADJUSTMENT.

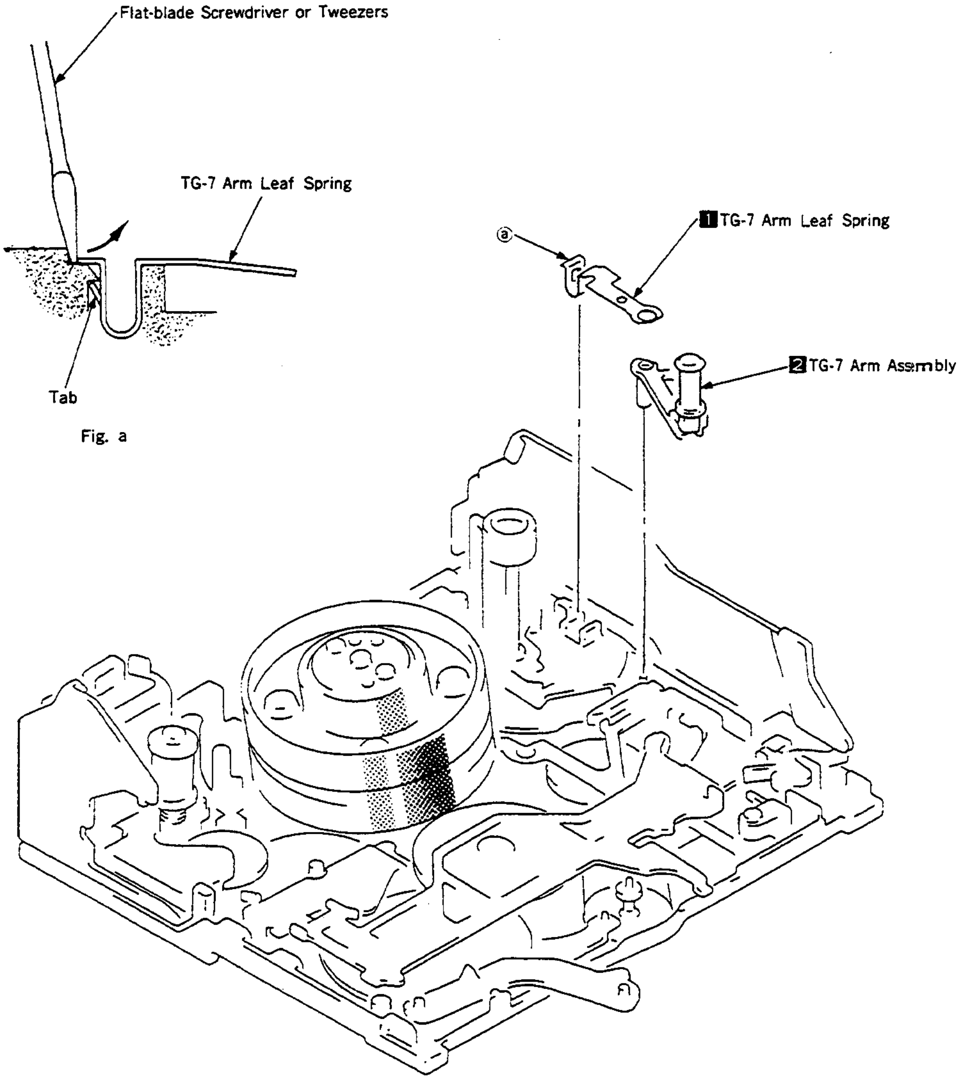


Fig. 20

## 3 . LM MOTOR ASSEMBLY (Fig. 21)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the LOAD mode (at the position where the FF arm assembly is not above the screw ❶).
6) Remove two screws ❶, then the LM motor assembly ❷.

### 2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly ❷ with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws ❶.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

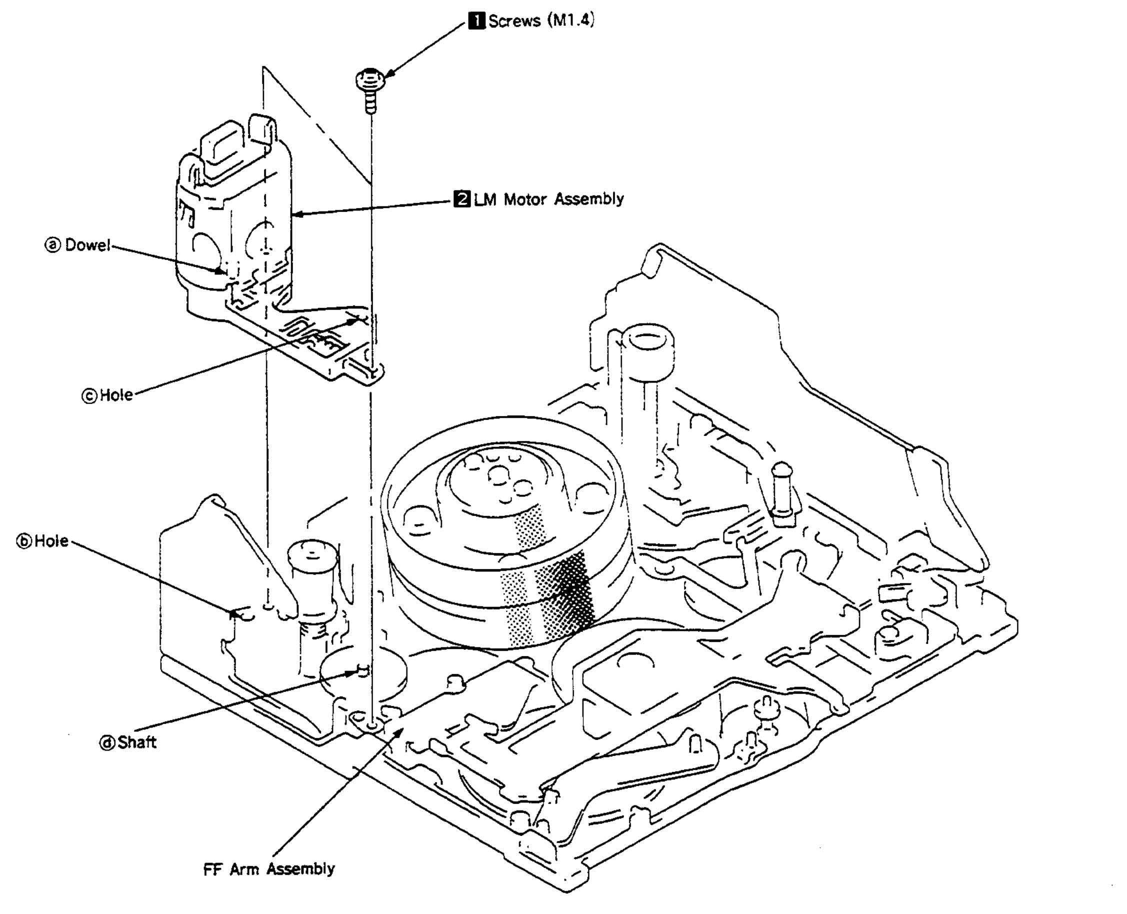


Fig. 21

### 3-14. LS ARM (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm ❶ from the shaft of mechanical chassis.

**Note** : Take care not to drop the LS roller ❷.

2. Mounting

1) Mount the LS arm ❶ meeting with mechanical chassis sh
and cam groove.

**Note** : Move the LS arm ❶ in arrow direction to confirm that the LS roller ❷ is surely inserted.

2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

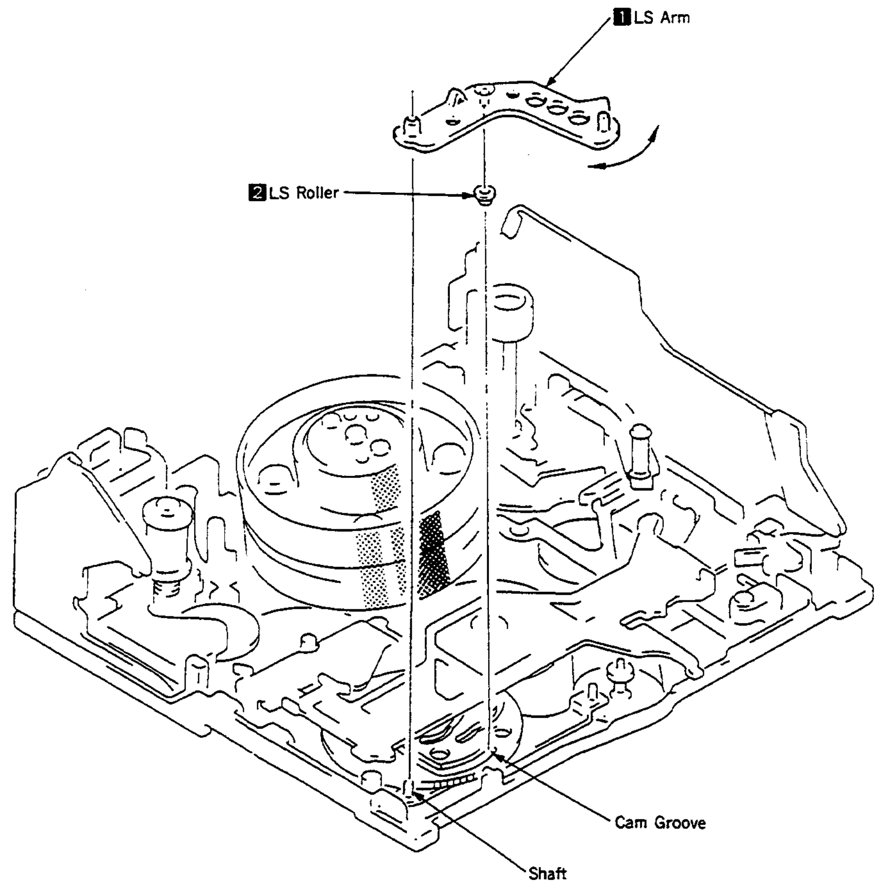


Fig. 22

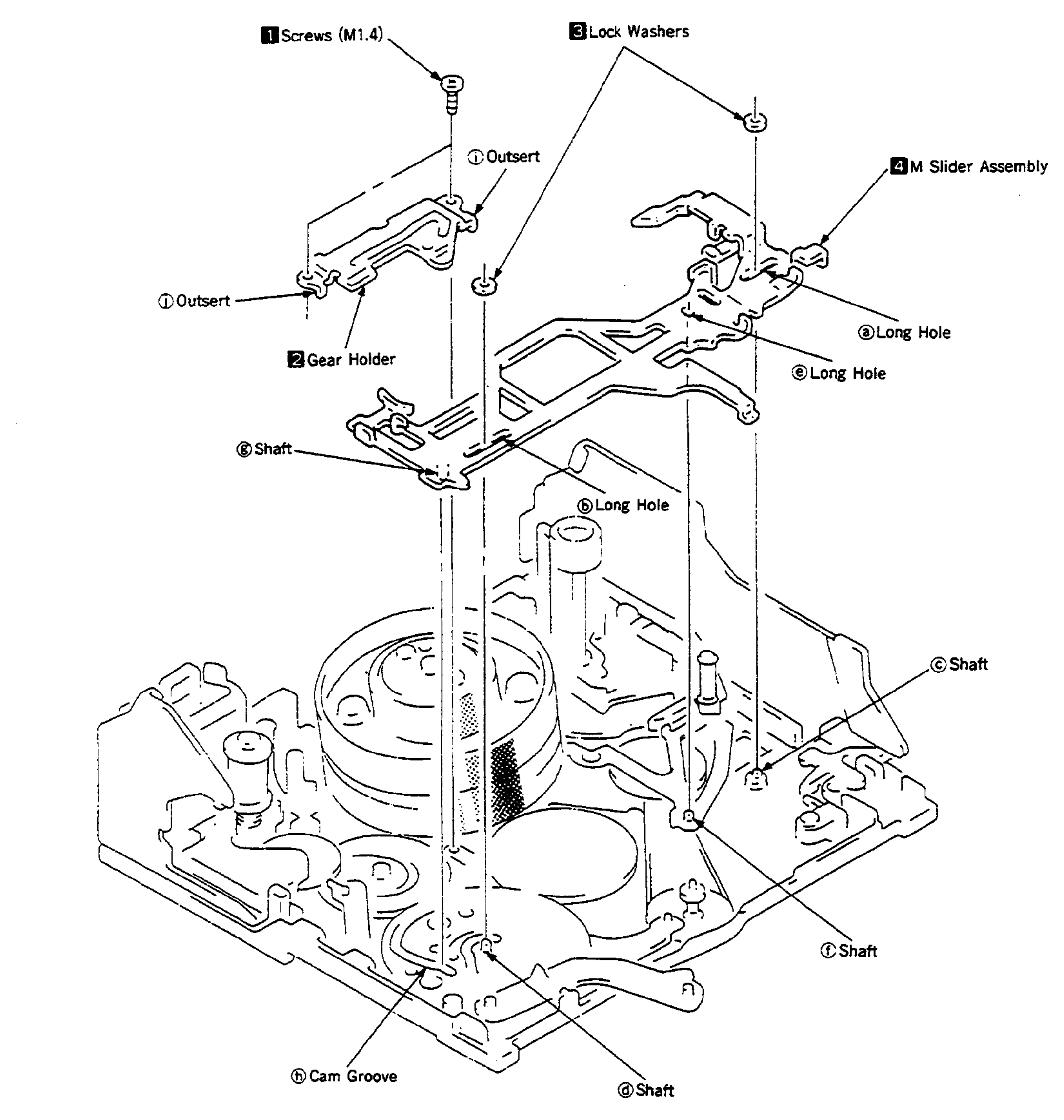
## . M SLIDER ASSEMBLY (Fig. 23)

### Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws ❶, then the gear holder ❷.
6) Remove two lock washers ❸, then the M slider assembly ❹.

### 2. Mounting

1) Mount the M slider assembly ❹, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers ❸.
3) Mount the gear holder ❷ with its outserts ⓘ and ⓙ inserted into holes in the mechanical chassis.
4) Tighten two screws ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.



❶ Screws (M1.4)
❸ Lock Washers
ⓘ Outsert
❹ M Slider Assembly
ⓙ Outsert
ⓐ Long Hole
❷ Gear Holder
ⓔ Long Hole
ⓖ Shaft
ⓑ Long Hole
ⓒ Shaft
ⓕ Shaft
ⓗ Cam Groove
ⓓ Shaft

Fig. 23

## 3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer ❶, then pinch press arm assembly ❷.

### 2.Mounting

1) Mount the pinch press arm assembly ❷, inserting its sh ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer ❶.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

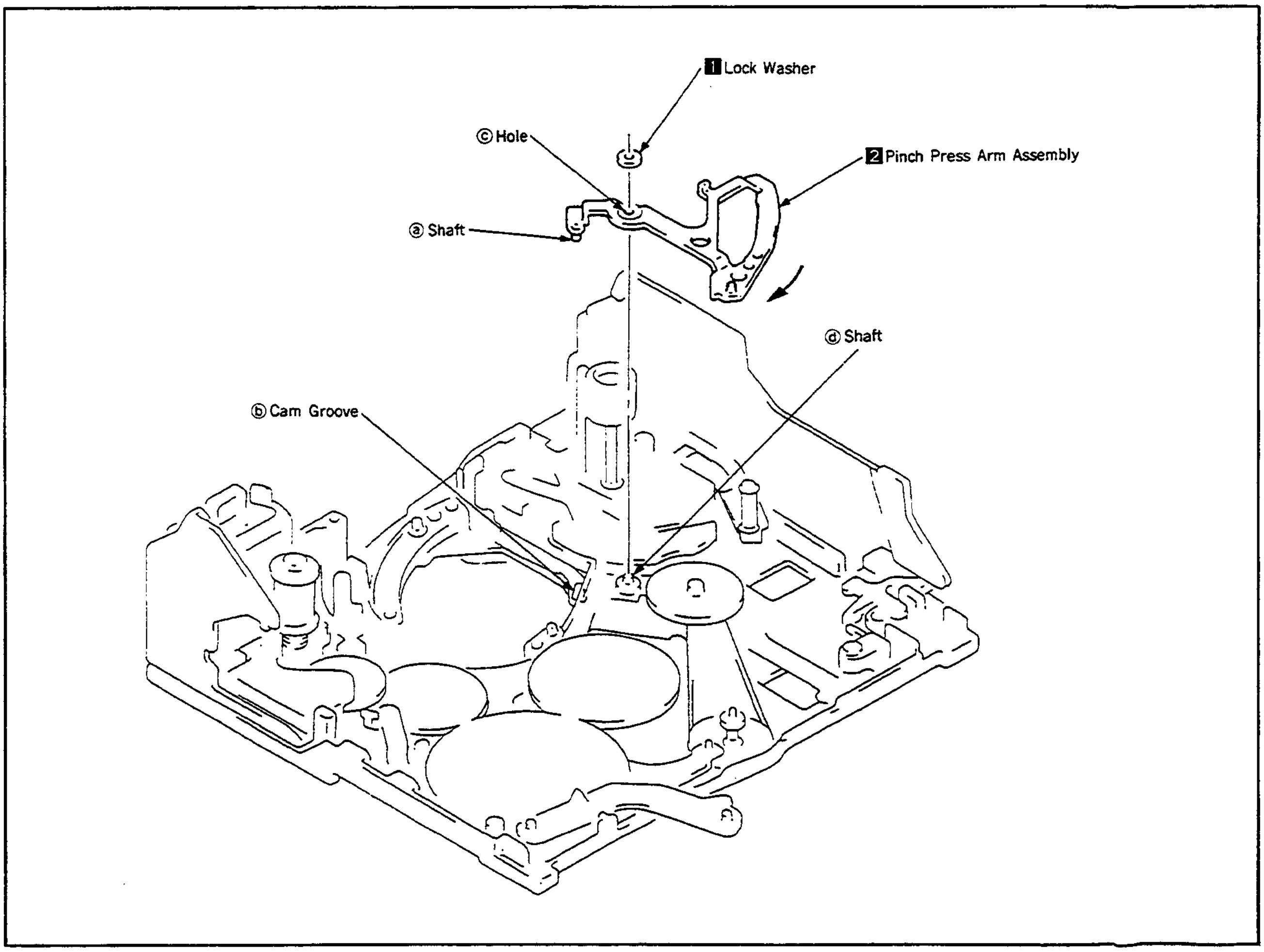


Fig. 24

## . CAM (Fig. 25)

### Removal

Referring to 1-1, remove the cassette compartment assembly.
Referring to 3-1, remove the Retainer, Gooseneck assembly.
Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam ❶.

### 2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

**Note :** Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam ❶, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

**Note :** Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

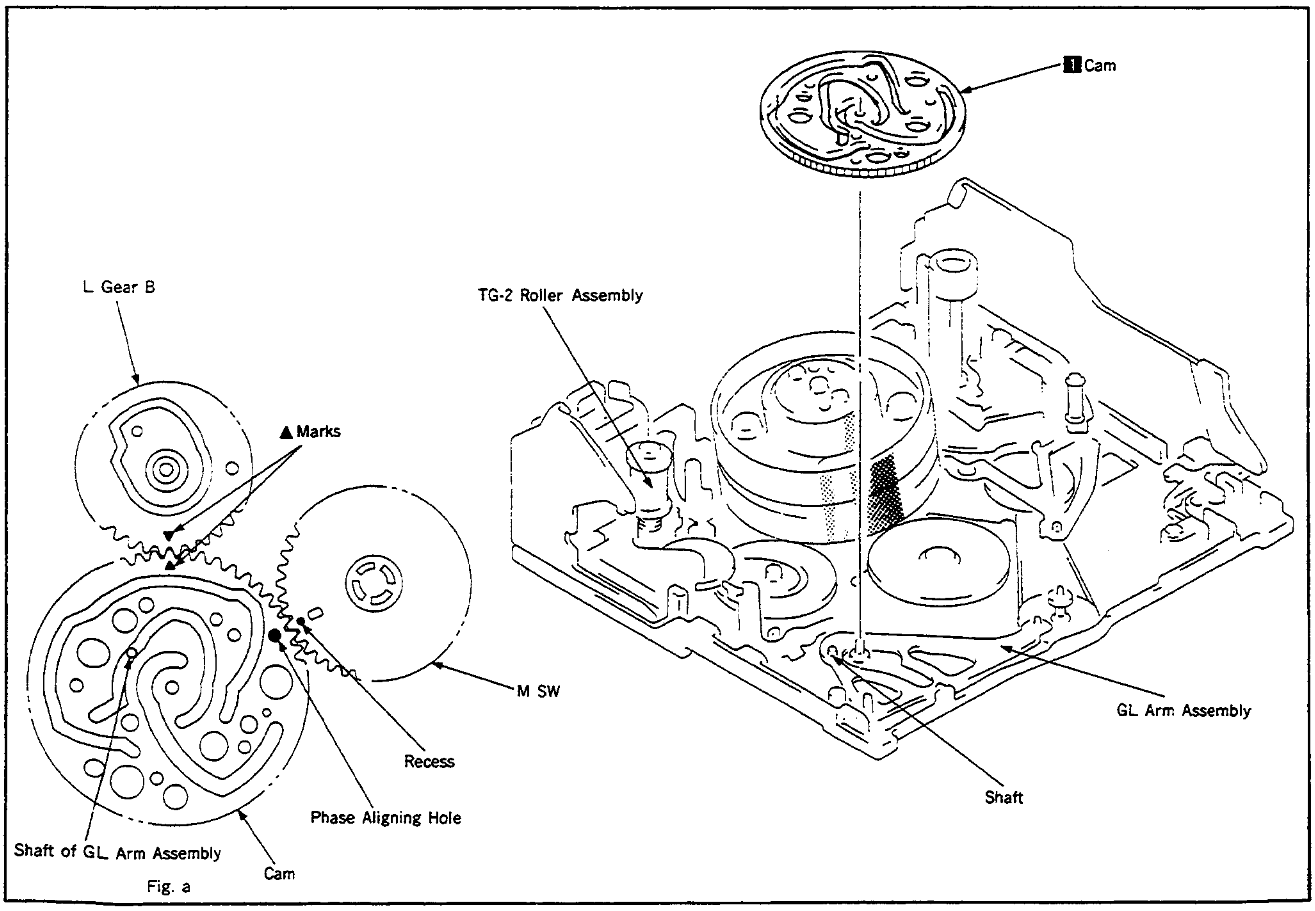


Fig. 25

## 3-18. GL ARM ASSEMBLY (Fig. 26)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly ❶.

### 2. Mounting

1) Mount the GL arm assembly ❶ with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

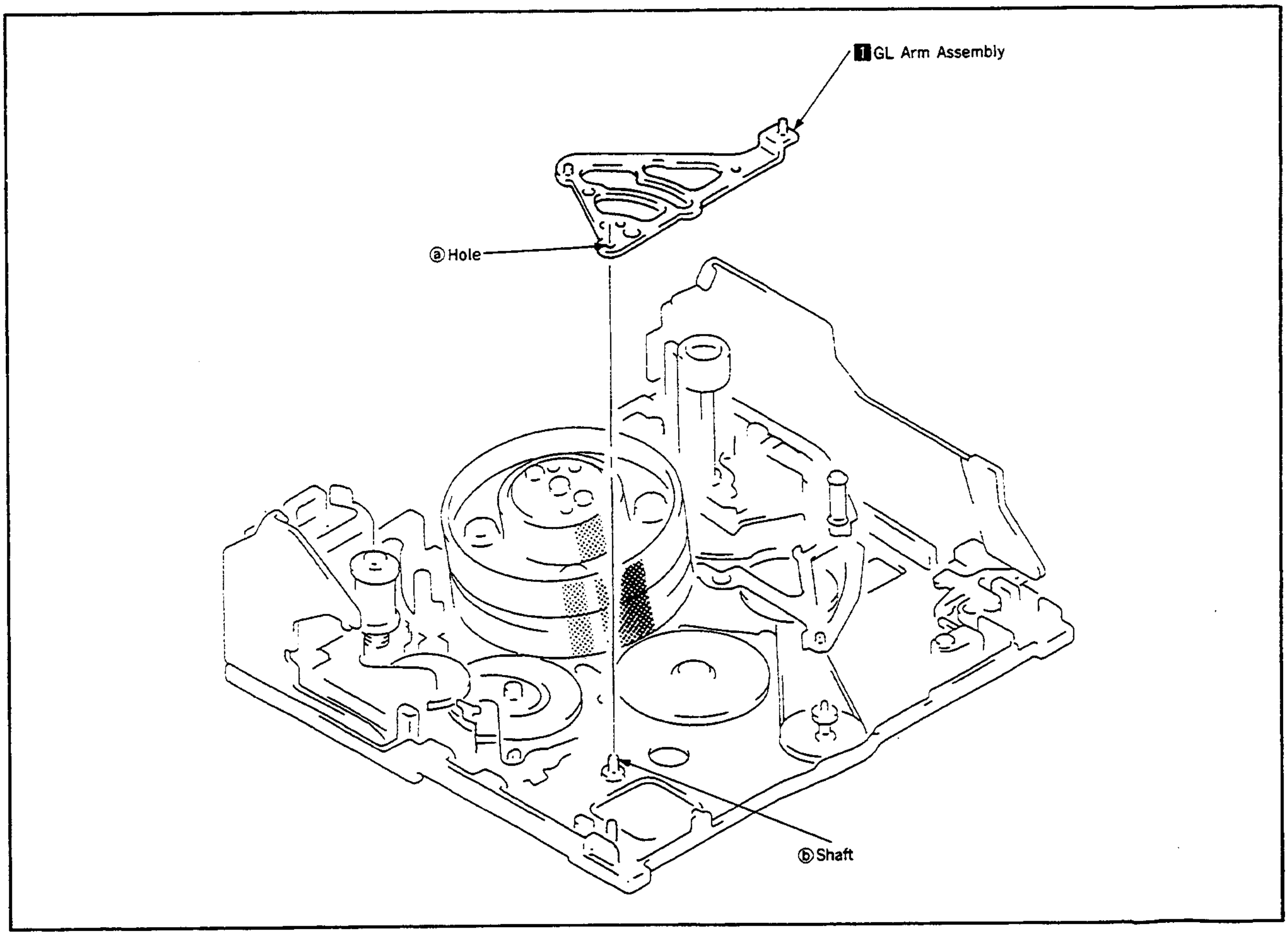


Fig. 26

## 9. L GEAR A AND L GEAR B (Fig. 27)

### Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly ❶.
10) Remove the L gear A ❷.
11) Remove the L gear B ❸.

### 2. Mounting

1) Insert the L gear B ❸ into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A ❷ into the shaft of mechanical chassis.
3) Mount the FF arm assembly ❶ with its two shafts inserted into the cam groove of L gear B ❸ and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

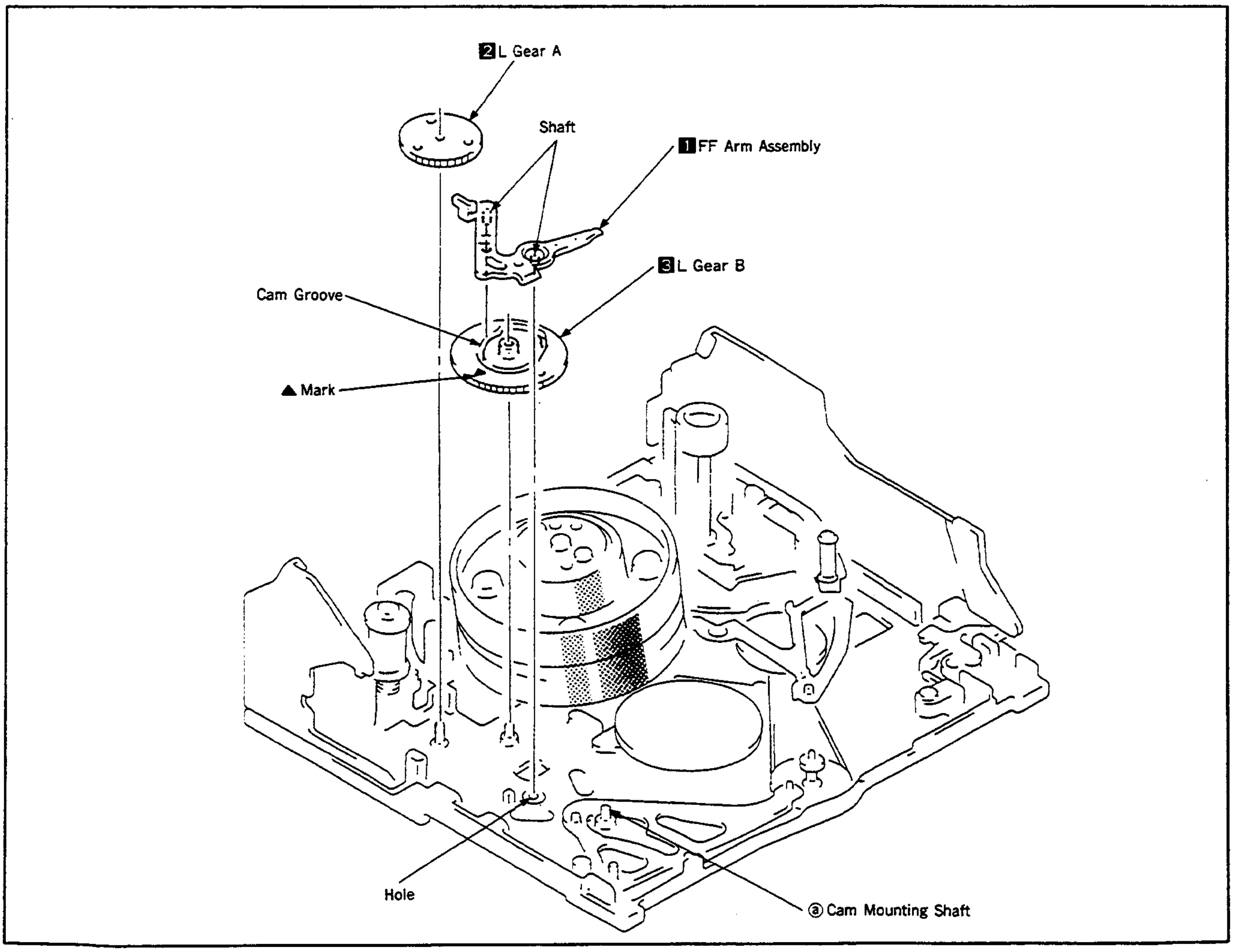


Fig. 27

## 3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer ❶, then remove together the Change gear assembly ❷, relay belt ❸ and relay pulley ❹.

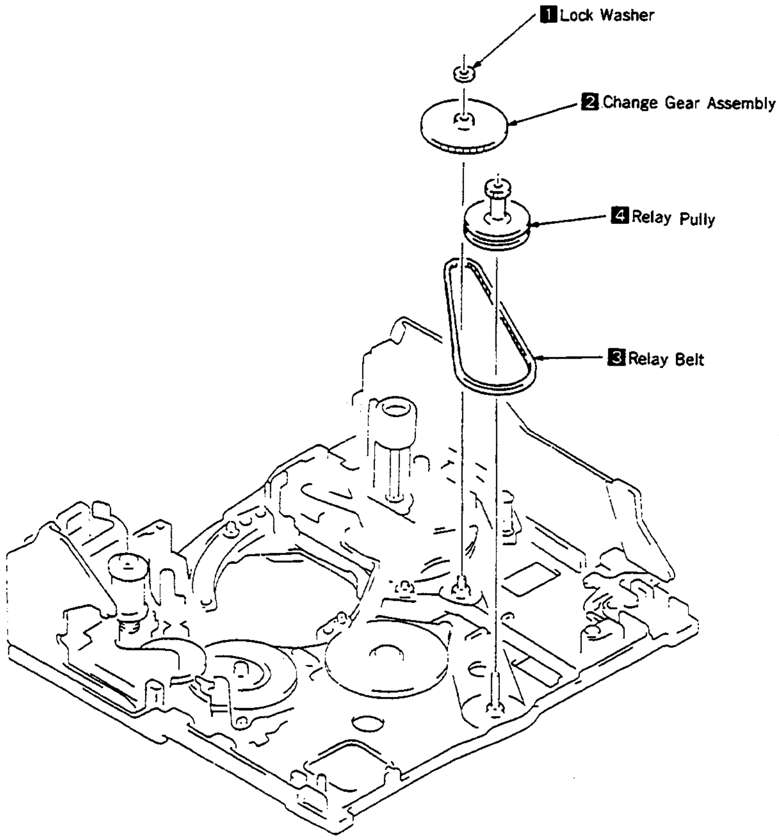
### 2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt ❸ to the relay pulley ❹ and Change gear assembly ❷, mount respective parts.
   *At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

**Note** : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer ❶.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.



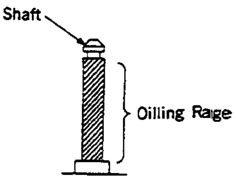


Fig. a

Fig. 28

### 3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removoal

· If possible, make a recording before removal.

1) Remove the two screws 1 (Fig. 29).
2) Mount the jig 2 (Ref. No. J-10) with the two supplied screws 3, then screw the attached hexagon socket screws 4 to the jig 2. The rotary upper drum 5 will move upward and come off (Fig. 30).

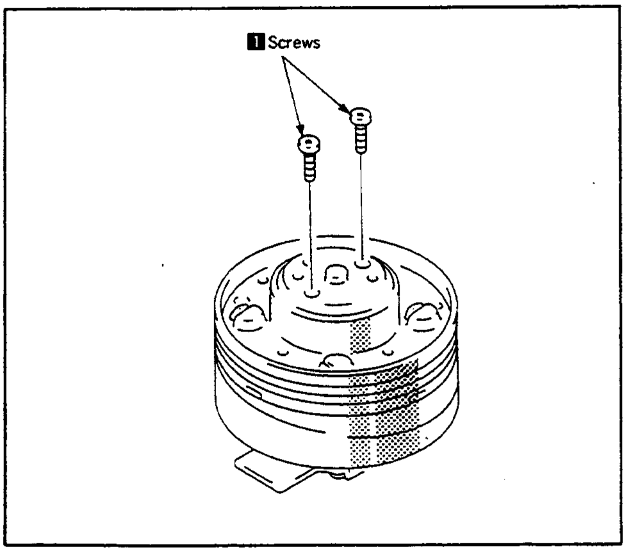


Fig. 29

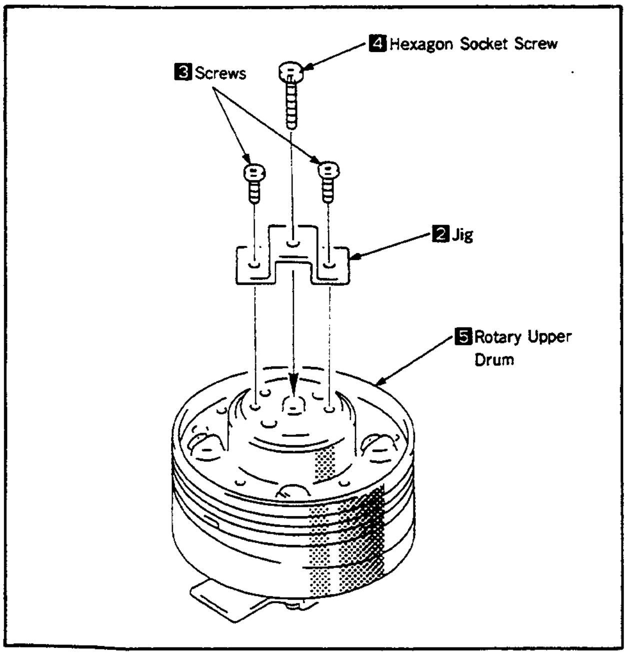


Fig. 30

2. Installation

1) Wipe clean the flange surface and the rotary upper drum 5 surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig 6 (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum 5 by passing the jig through its positioning hole 7. (Fig.31)
3) Remove the jig 6 and push down the rotary upper drum 5 gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws 1 alternately (Fig.29).
4) Insert the jig 6 into the positioning hole 7 again and confirm that it goes in smoothly. If it does not, loosen the two screws 1, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws 1.

**Note** : After installing, be sure to perform tape path adjustment as described in section 4.

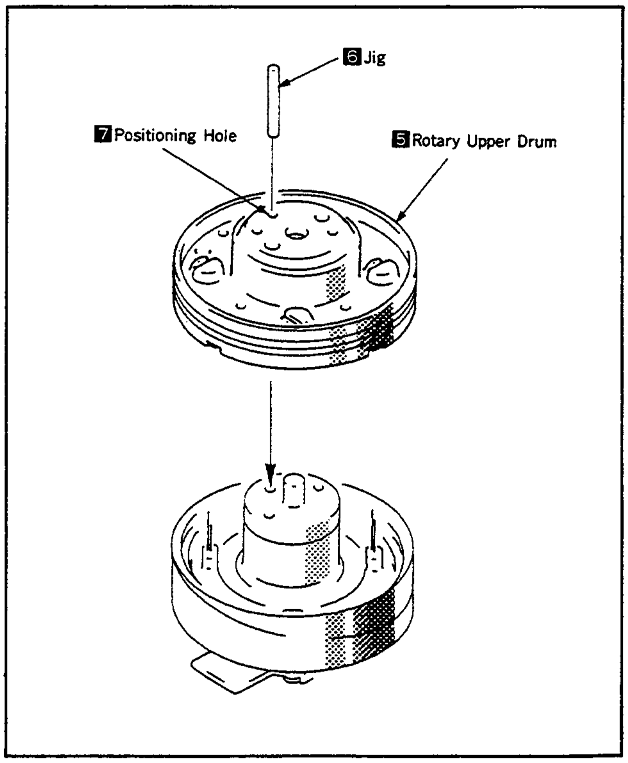


Fig. 31

## 3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

### 1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw **1**.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow 🅐 using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow 🅑.
6) Tighten the screw **1**.

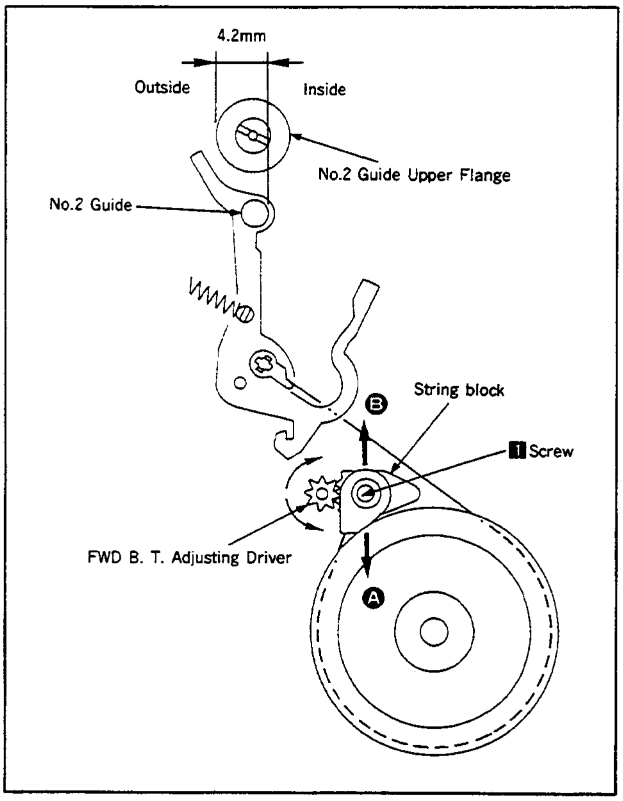

4.2mm
Outside
Inside
No.2 Guide Upper Flange
No.2 Guide
String block
B
1 Screw
FWD B. T. Adjusting Driver
A

Fig. 32

## 3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
   If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

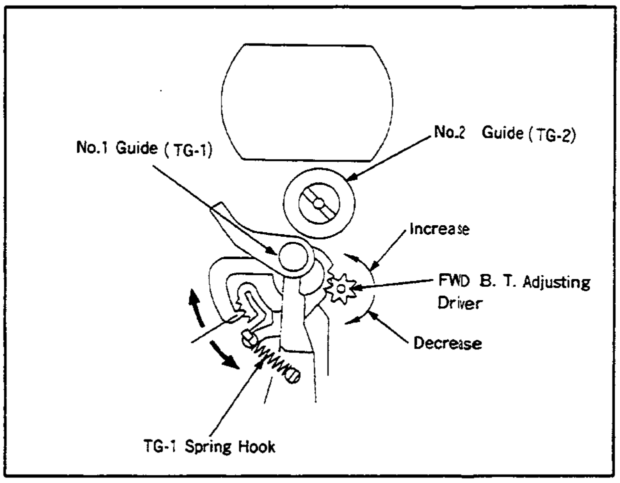

No.1 Guide (TG-1)
No.2 Guide (TG-2)
Increase
FWD B. T. Adjusting Driver
Decrease
TG-1 Spring Hook

Fig. 33

## 3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

## 4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.
This does away a tracking control knob and allows accurate track tracing.
On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.
Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series
Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

**Note :** Setting of PATH mode = TRACK SHIFT mode
If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

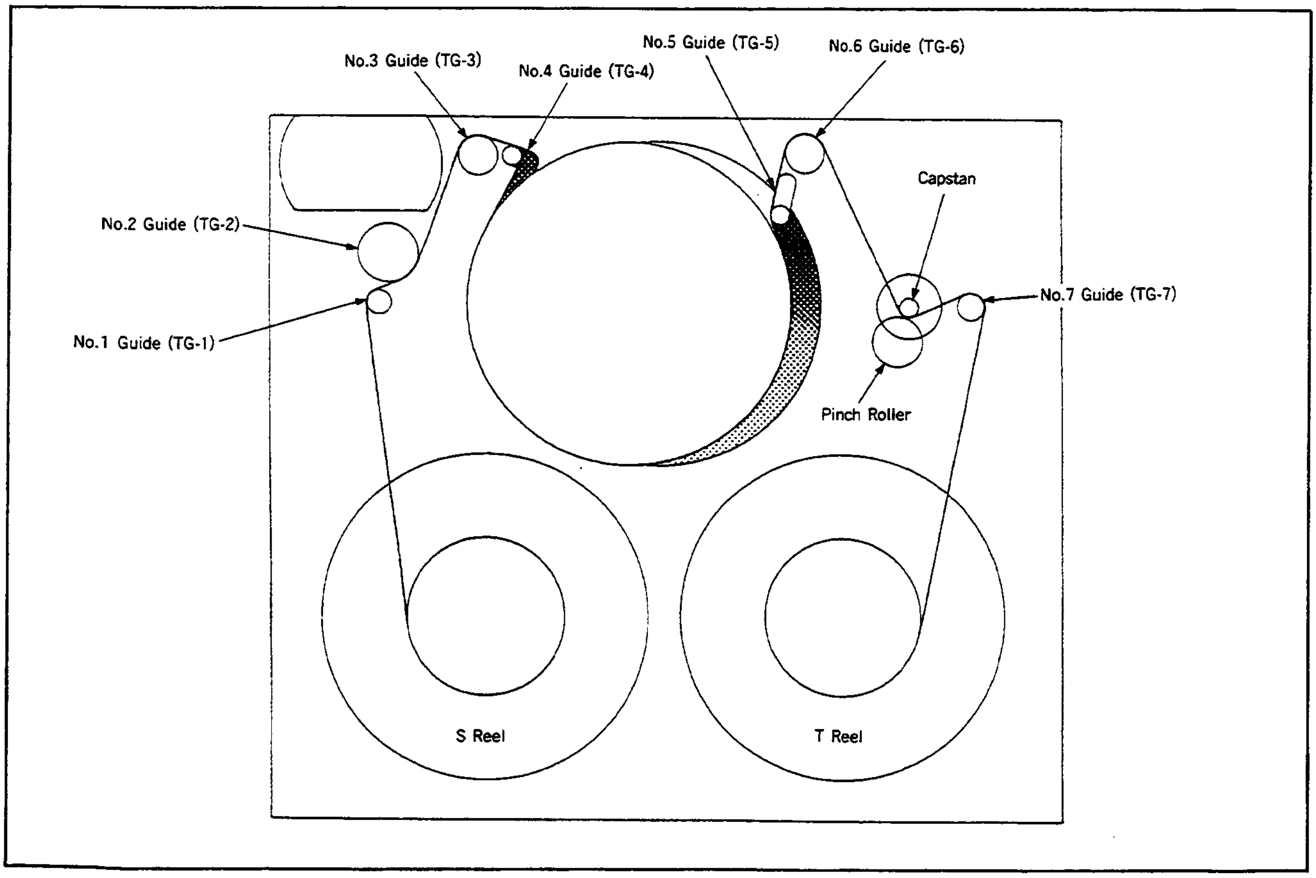


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).

Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

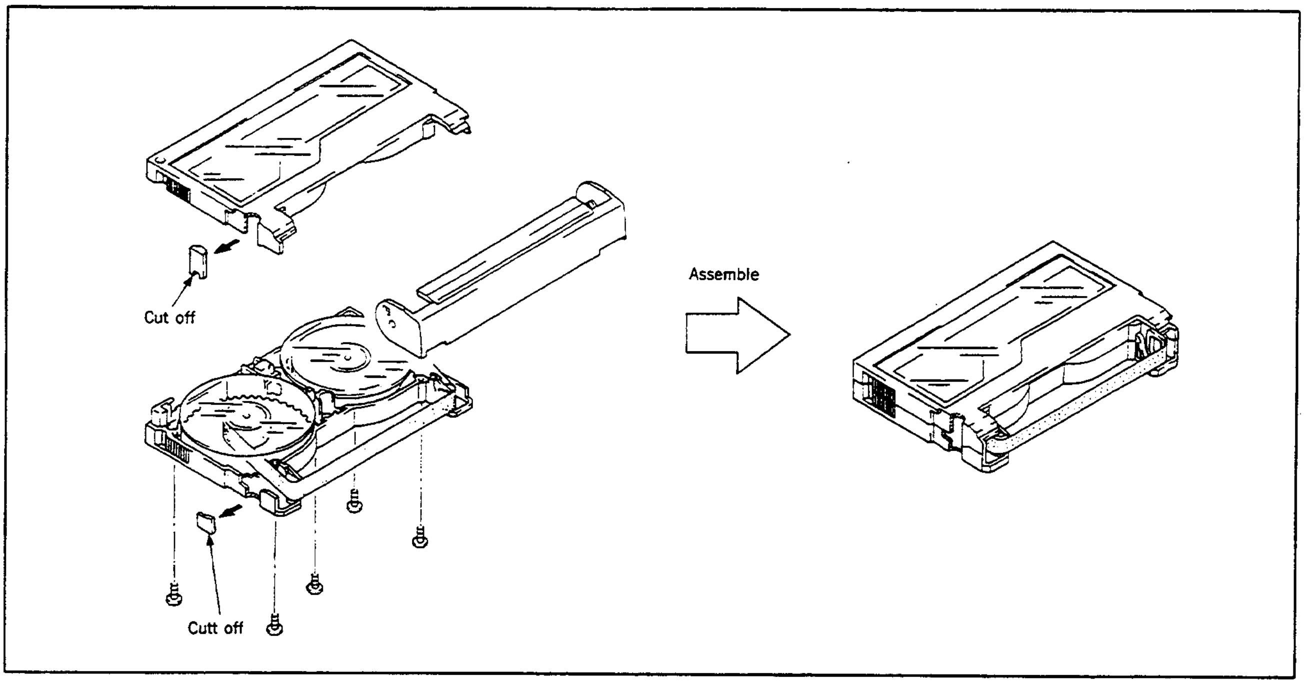


Fig. 34-B

## 4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
   CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
   CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

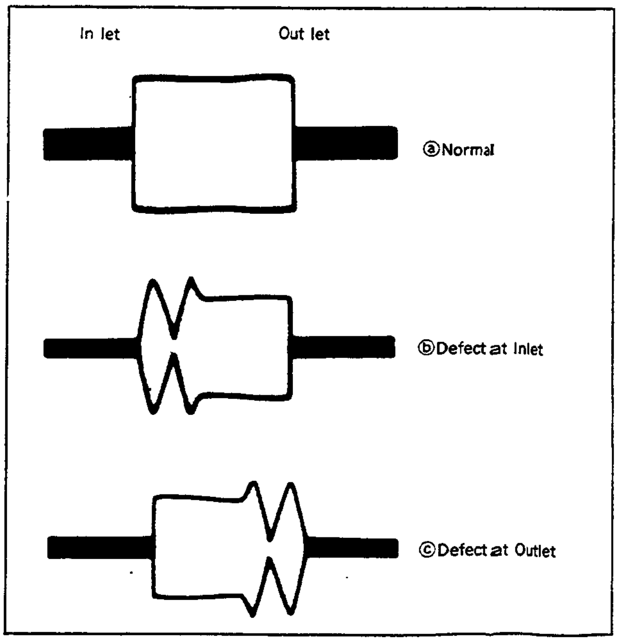


Fig. 35

## 4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw 1 and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw 1 to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw 2 and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw 2 to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

**Note** : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

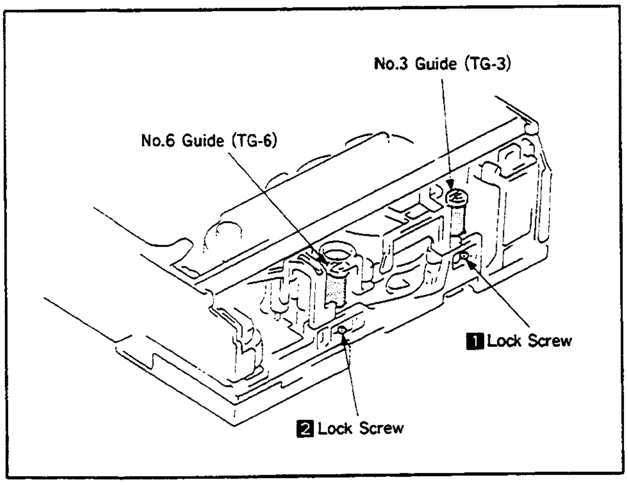


Fig. 36

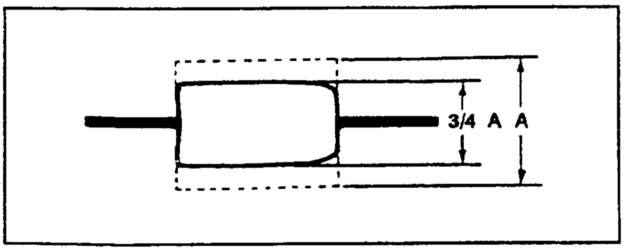


Fig. 37

## 4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

### 4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

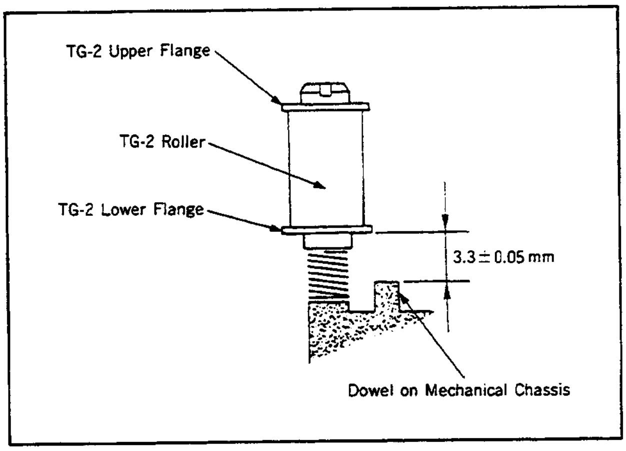


Fig. 38

**[Reference]**
**This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.**

| Guide | Guide adjustment | Rotating direction of adjustment screw |
|---|---|---|
| TG-2, 3, 6 | Raise | Counterclockwise |
| | Lower | Clockwise |
| TG-7 | Raise | Clockwise |
| | Lower | Counterclockwise |

### 4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No.2 guide (TG-2) ❶ (Fig. 39). If it is, turn the upper flange ❸ of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counterclockwise and repeat step 5.
   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).

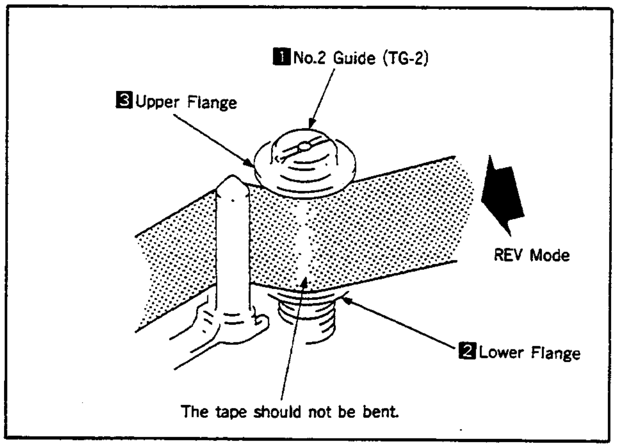


Fig. 39

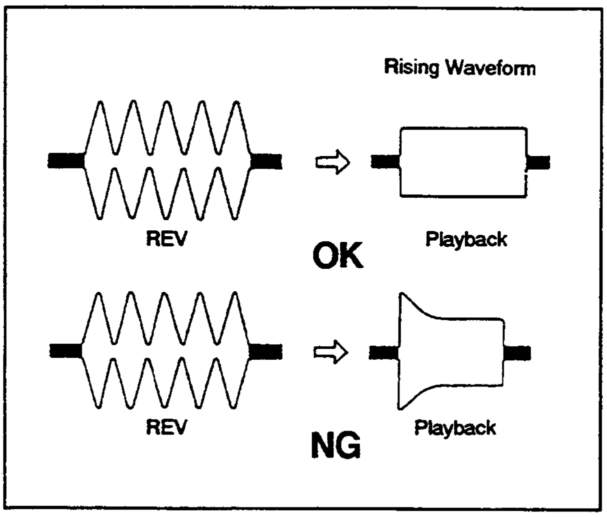


Fig. 40

### 4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

**Note** : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the hight adjusting screw ❹ of the No.7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) ❸ until bending is within the specification (0.5mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3mm or less, adjustment can be considered completed.

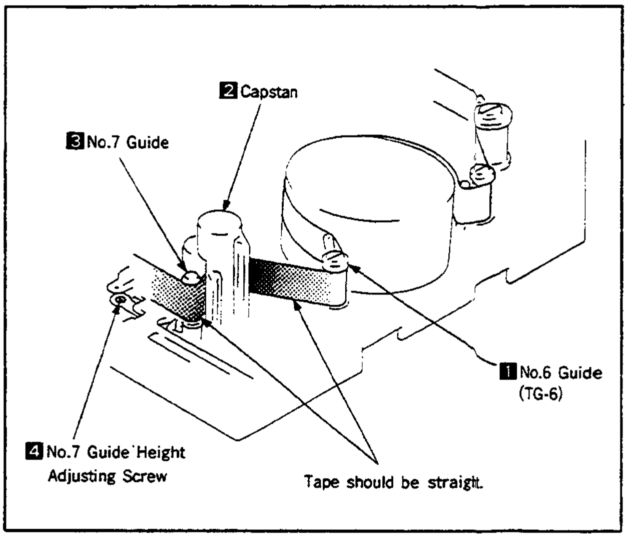


Fig. 41

### 4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig.42).
   Otherwise, perform section 4-2 Tracking Fine Adjustment.

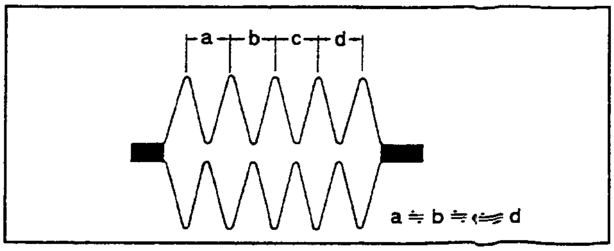


Fig. 42

## 4-6. CHECK AFTER ADJUSTMENT

### 4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value ($E_{MIN}$) is 65 % of the maximum value ($E_{MAX}$) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

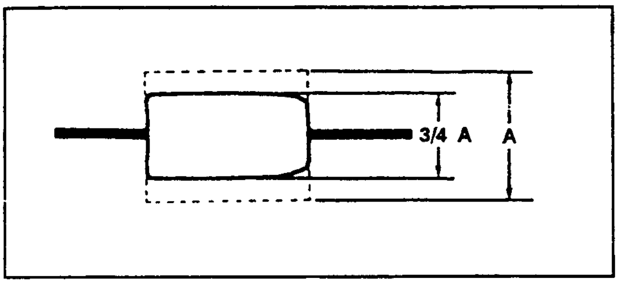


Fig. 43

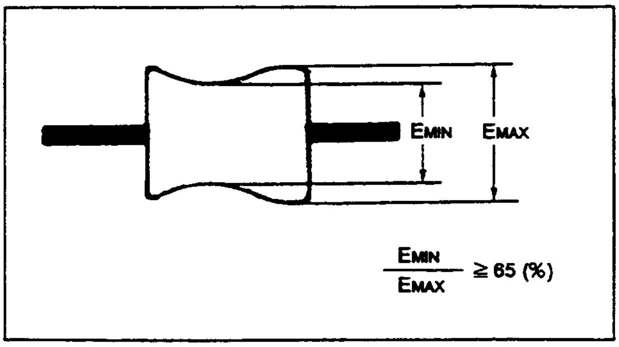

EMIN
EMAX
EMIN / EMAX ≧ 65 (%)

Fig. 44

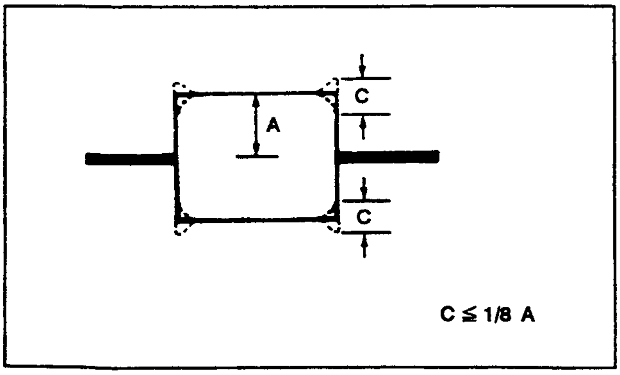


Fig. 45

### 4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

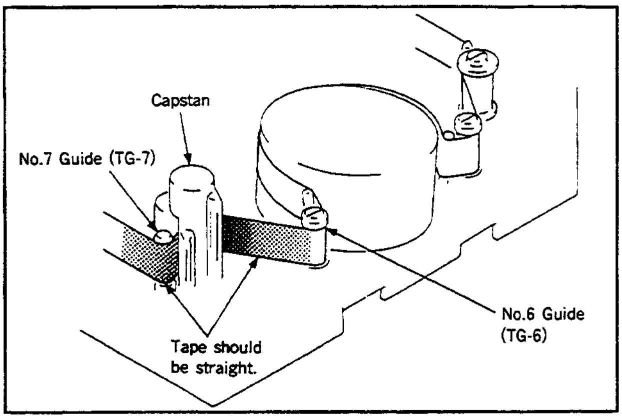

Capstan
No.7 Guide (TG-7)
No.6 Guide (TG-6)
Tape should be straight.

Fig. 46

### 4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

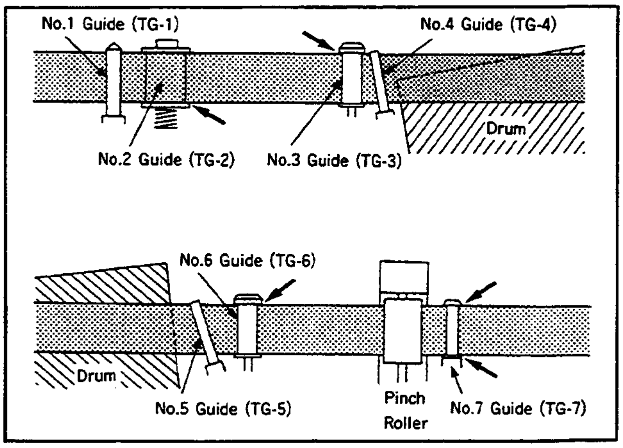

No.1 Guide (TG-1)
No.4 Guide (TG-4)
Drum
No.2 Guide (TG-2)
No.3 Guide (TG-3)
No.6 Guide (TG-6)
Drum
No.5 Guide (TG-5)
Pinch Roller
No.7 Guide (TG-7)

Fig. 47

# 8mm Video MECHANICAL ADJUSTMENT MANUAL IV

## A MECHANISM

## SUPPLIMENT-2

**Video 8**

### 〈Connection of Mode Selector IV Conversion Connector〉

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

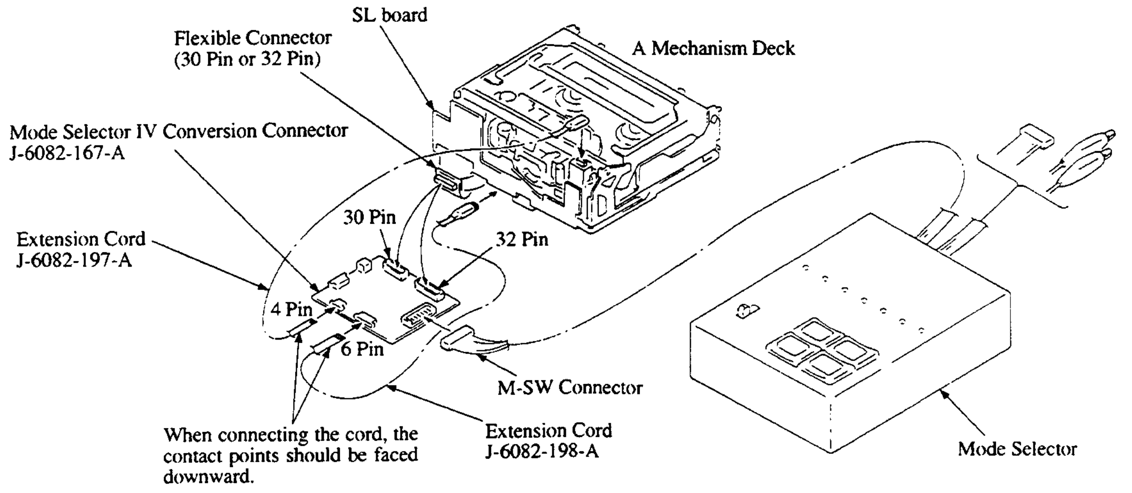
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

(CCD-FX300 series, FX400 series. FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477))

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.


SL board
Flexible Connector
(30 Pin or 32 Pin)
A Mechanism Deck
Mode Selector IV Conversion Connector
J-6082-167-A
30 Pin
Extension Cord
J-6082-197-A
32 Pin
4 Pin
6 Pin
M-SW Connector
When connecting the cord, the contact points should be faced downward.
Extension Cord
J-6082-198-A
Mode Selector

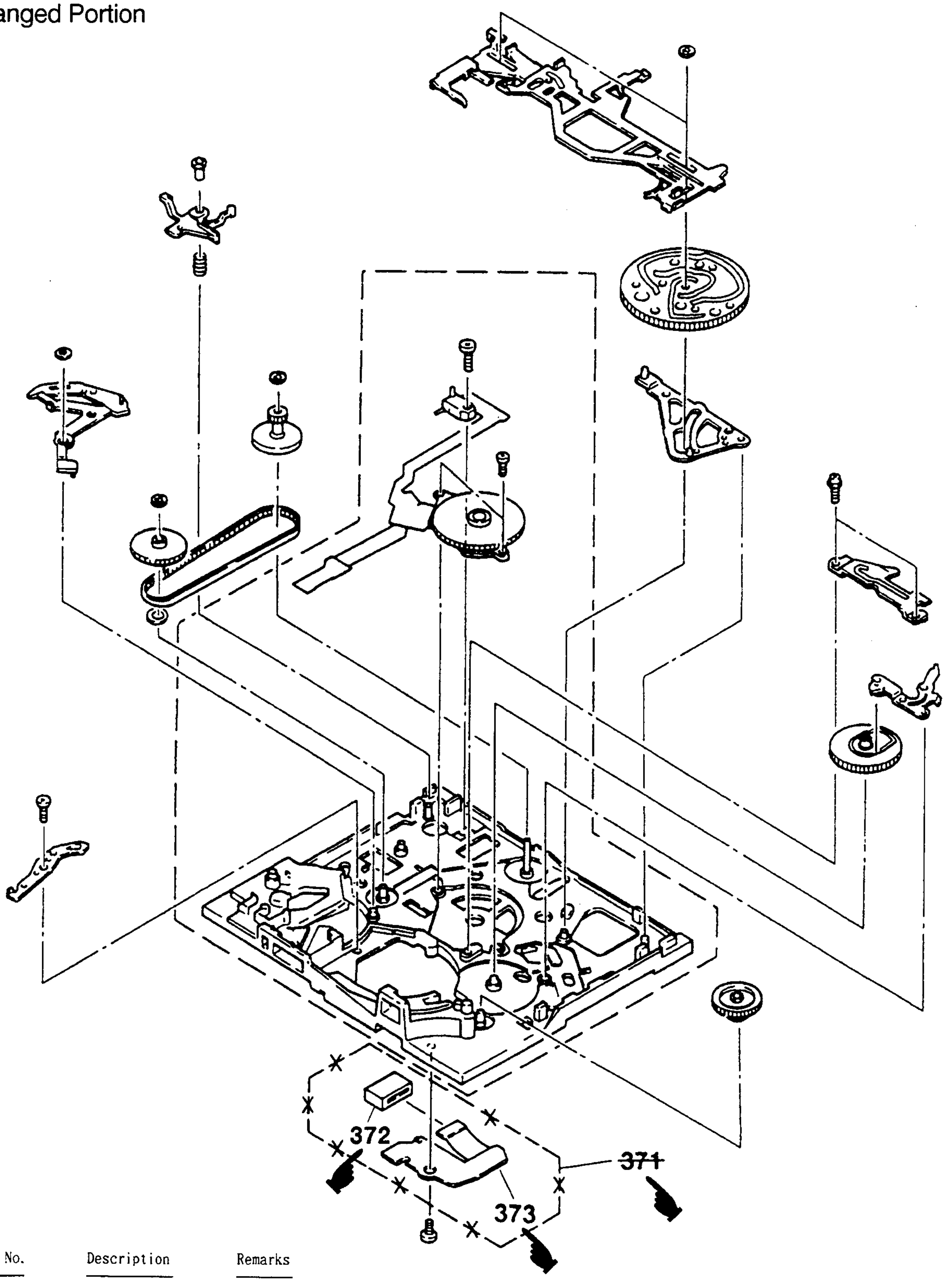
### 〈CORRECTION〉

P10. 2-4 Service jigs list

| | | Incorrect | | Correct |
|---|---|---|---|---|
| J-15 | FWD B.T adjusting driver | J-6082-182-A | ➔ | J-6082-187-A |

## MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



| Ref.No. | Part No. | Description | Remarks |
|---|---|---|---|
| ~~371~~ | ~~A-7040-311-A~~ | ~~FP-444 ASSY~~ | ☛ |
| 372 | 1-691-254-13 | CONNECTOR, TRANSLATION 10P | ☛ |
| 373 | 1-641-639-13 | FP-442 FLEXIBLE BOARD | ☛ |

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**Personal Video Group**

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# 8mm Video MECHANICAL ADJUSTMENT MANUAL IV

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